THE JOURNAL

OF THE

ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

FEBRUARY 8TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The election of the following member was announced:—
E. J. BARRON, Esq., F.S.A.

The following list of presents was read, and thanks were voted to the respective donors for the same:—

FOR THE LIBRARY.

From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. XX. No. 1.
From the INSTITUTE.—The Canadian Journal. Vol. XIV. No. 6.
From the AUTHOR.—Bibliothèque des Sciences Contemporaines. By Dr. Paul Topinard.
From the AUTHOR.—Angola and the River Congo. 2 vols. By J. J. Monteiro, Esq.
From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV. No. 165.
From Messrs. LONGMANS & Co.—The Native Races of the Pacific States of North America. Vol V. By H. Bancroft, Esq.
From the EDITOR.—Revue Scientifique. Nos. 29, 30, 31, 32. 1876.
From the SOCIETY.—Bulletin de la Société Imperiale des Naturalistes de Moscow. No. 2. 1875.
From the INSTITUTION.—Report of the Smithsonian Institution. 1874.
From the EDITOR.—Materiaux pour l'Histoire de l'Homme. 1875.
From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. III. No. 23.
From JAMES BURNS, Esq.—Human Nature for January, 1876.
From the EDITOR.—Nature (to date).

The DIRECTOR read the reply of Mrs. Goodenough to the letter of condolence addressed to her on November 9th, 1875.

The following resolution, moved by Captain BEDFORD PIM, R.N., M.P., and seconded by Mr. JOHN EVANS, F.R.S., was then carried unanimously:—

Resolved—That a vote of condolence be passed to the widow of Dr. Richard King, the eminent Arctic Traveller and founder of the Ethnological Society, who died on Friday last, the 4th inst., and whose services to the nation, to ethnology and anthropology, and to the medical profession, are well known to all of us.

The following papers were read by the authors:

On the ORIGIN *of the* SOUTH SEA ISLANDERS, *and on* SOME TRADITIONS *of the* HERVEY ISLANDS. By Rev. W. WYATT GILL, B.A.

MR. ALFRED WALLACE, in his admirable book, entitled "The Malay Archipelago," has advanced the theory that the Polynesians are descended from a race which once overspread a vast submerged southern continent. As the land gradually sank, a few of the aborigines may have escaped to the tops of the loftiest mountains, around which subsequently coral reefs formed. Admitting that Polynesia is pre-eminently an area of subsidence, and its great wide-spread groups of coral reefs may mark out the position of former continents, still I apprehend that Mr. Wallace's inference is unwarranted, for—

1. Supposing that human beings inhabited this great southern continent at the period of the subsidence, and that a remnant escaped, I cannot believe that human life could, under such circumstances, be sustained for any considerable time, as usually there is nothing edible on the tops of the Pacific mountains, save berries, to say nothing of the difficulty in most cases of obtaining water.

2. The theory is utterly opposed to the native accounts of their own origin, which all point to the north-west.

3. The spread of the race can easily be accounted for on the basis of historical facts. In 1862 I saw on Manuâ, or eastermost island of the Samoan group, an open boat which had accidentally drifted from Moorea, a distance of 1,250 miles, and no life lost. A few months later in the same year, Elikana and his friends drifted in a canoe from Manihiki to Nukuraurae, in the Ellice group (lying N.W. of Samoa), a distance of some 1,360 miles. Half of the party on board perished from want of food and water. In both these instances the drifting was from east to west before the trade winds. A far more remarkable event occurred in January, 1858, during the prevalence of the violent *westerly*

winds, when a numerous family of adult natives drifted from Fakaofo, in the Union group, north of Samoa, to an uninhabited spot known as Nassau Island, thence to Palmerston's Island, and, finally, to Mangaia (where I lived), altogether a distance of upwards of 1,200 miles in a south-easterly direction.

4. The colour, hair, general physiognomy, habits, character, and especially the *language* of the Polynesians clearly indicate a Malay origin. This cannot be accidental. My impression is that long ages ago the progenitors of the present race entered the Pacific from the south-eastern fork of New Guinea, but were driven eastward by the fierce Negrito race. The greatest distance from land to land, as they pressed eastward, would be from Samoa to the Hervey group, about 700 miles, which, as we have seen, has been successfully traversed by natives in their fragile barques within my own observation.

The classical word for nether-world in the dialect of the Hervey group is Avaiki, in Tahitian Hawaii, in New Zealand Hawaiki. The universe is conceived of as the hollow of a vast cocoa-nut shell, in the interior of which are many lands, the abode of unhappy ghosts and infernal gods. Near an aperture at the top of this vast shell, on the outside, are located their island homes. Rising one above another into immensity are at least ten separate heavens, constituting the elysium of the brave. Sometimes the gloomy region beneath is called "po" or "night." Originally mankind and the natives of Avaiki interchanged visits at will through the aperture at the top, which is now closed on account of the continual depredations of fairy visitors. Now two modes of access alone exist to nether-world—

1. By following the bright track of the sun-god Rā, and entering in his train the domains of Night.

2. By treading on a branch of the sacred *bua* tree (*Fagræa berteriana*), or Mystic Tree of Death.

Native song and myth delight in recounting the adventures of those who have visited spirit-world. Especially rich are the Hervey Islanders in pathetic "laments" over those who have followed the sun-god Rā into the gloomy region of Avaiki. These exile spirits, clad with bind-weed and flowers of the heliotrobe, obey the commands of a leader, who fixes the time for their departure.

The esoteric doctrine of the priests was, that souls leave the body ere breath has quite gone, and travel on to the edge of a cliff facing the setting sun (Rā). A large wave now approaches the base of the cliff, and a gigantic *bua* tree, covered with fragrant blossoms, springs up from Avaiki to receive on its far-

reaching branches human spirits, who are mysteriously impelled to cluster on its limbs. When at length the mystic tree is covered with human spirits, it goes down with its living freight to nether-world.

Akaanga, the slave of fearful Miru, mistress of the invisible world, infallibly catches all these unhappy spirits in his net and laves them to and fro in a lake. In these waters the captive ghosts exhaust themselves by wriggling about like fishes, in the vain hope of escape. The net is pulled up and the half-drowned spirits enter the presence of dread Miru, who is ugliness personified.

The secret of Miru's power over her intended victims is the "kava" root (*Piper mythisticum*). A bowl of this drink is prepared for each visitor to the shades by her four lovely daughters. Stupefied with the draught, the unresisting victims are borne off to a mighty oven and cooked. Miru, her peerless daughters, her dance-loving son, and the attendants subsist exclusively on human spirits, decoyed to nether-world, and then cooked. The drinking cups of Miru are the skulls of her victims. She is called in song "Miru-the-Ruddy," because her cheeks ever glow with the heat of the oven where her captives are cooked.

Such was believed to be the inevitable fate of cowards and of all who died a natural death. But a nobler fate awaited warrior spirits, whether male or female. Their home was the warrior's paradise in the heavens. Winter was believed to be occasioned by the chilly touch of disembodied spirits. During the rainy season they cannot rise to this felicity; but when in the month of August the coral tree is in blossom (the blood-red colour of the flowers being symbolical of their own blood spilt in war), they prepare for their departure. When all is ready, *i.e.* when all the warrior-ghosts are assembled at the edge of the cliff overlooking the marae of the war-god Rongo, still facing the setting sun, there suddenly springs up at their feet a mountain, up which they climb. The road upwards is built of the clubs, spears, and stones with which they were slain. Arrived at the summit they leap into the azure expanse, where they float as *specks*. Hence this elysium of the brave is often called Speckland. These fortunate spirits look down with ineffable disgust upon the wretches in Avaiki. They are covered with garlands of sweet-scented flowers, and spend their time in dancing the war dance and in reciting, over and over again, the brave deeds performed in life.

The inevitable result of this belief was to foster an utter contempt for violent death. Many anecdotes are related of aged warriors, scarcely able to hold a spear, insisting on being led to the field of battle, in the hope of gaining the home of the

C.F. Kell, Lith. London, E.C.

TOMB. ROTUMAH.

brave. Like ourselves, the natives of Mangaia despised bush fighting.

The heaven of the natives of Aitutaki consisted in a land where Tukaitaua unceasingly feeds his friends on the finest sugarcane, which they, with unalloyed appetites, chew *ad æternum*. Their hell was located in the domains of Miru, who compels all visitors to swallow a bowl of living centipedes! In the agony of pain which succeeds, the poor wretches drown themselves, and are afterwards cooked and eaten by the hag Miru and her companions.

I have just learned, with much interest, that the inhabitants of Port Moresby, in New Guinea, place their elysium in a mythical region named *Erema*, lying towards the setting sun, far beyond Cape Suckling, the last bold promontory towards the S.W. Erema is covered with sago-palms, and good spirits are permitted to eat sago without stint or cessation. But, unlike the South Sea Islanders, the natives of the S.E. peninsula of New Guinea believe that eventually the spirit returns to its ancient haunts to inhabit some other human body.

Mr. Brabrook read a communication by Mr. W. W. Wood, "On the Tombs in the Island of Rotumah."

On reading Lieutenant Oliver's paper on "The Megalithic Structures of the Channel Islands," I bethought me of some notes and sketches made years ago on the Island of Rotumah, in the South Pacific Ocean, where I met with some curious stone tombs, composed of masses so large that it was difficult to conceive the means by which the natives had been able to move and arrange them. The Island of Rotumah is an outlier of the Fiji group, though at a considerable distance to the north. The natives are of a different race and lighter colour than those of the Fiji's, and are distinguished (or were) for their amiable and inoffensive manners. The island is a small one, and not very high, except towards one end, where there is a precipice overlooking the sea, with a large flat terrace at its base, overflowed at high tide. At a short distance is a very remarkable object—a small island composed of an immense rock, which, by some great convulsion, has been split nearly in the middle, leaving a passage through which the sea flows and boats pass in fine weather. About half-way up the chasm is an enormous rounded rock, which is jammed in between the two nearly vertical sides of the passage and hangs thus suspended. From a certain point the sides of the rock appear quite or very nearly vertical, and the appearance of this great mass of stone, hung

as it were, by two points of contact over the passage, is most singular, as will be seen by the accompanying sketch.

The megalithic monuments on the principal island were not far from the beach, near some very fine old trees. The tombs consisted of a low platform of earth, enclosed by slabs of stone set vertically, and in the centre one or more huge stones of irregular shape—mere masses of rock—some of which must weigh many tons. The natives seemed shy of giving any information respecting these curious structures, and from a European, who had settled on the island, we could only learn that they were tombs. The remarkable point was that these simple people should, without the aid of machinery, have been able to raise and arrange these great masses of rock. I took no measurements, fearful of alarming the prejudices of a superstitious people, but in the sketch is introduced a human figure as a standard of comparison (Plate xxii.).

The Island of Rotumah is seldom visited except by whalers, and I do not remember to have seen any account of these curious burial places in any narrative of voyages. As the relics of the ancient religions and customs of most of the islands of the Pacific are fast disappearing, it may be worth while to preserve the memory of them for the benefit of future historians of these races. The builders of the colonnades of the Island of *Tinian* are forgotten, and we know little respecting the sculptors of the curious statues of the Island of Ascension.*

Discussion.

A discussion on the foregoing papers then took place, in which Professor T. McHughes, Professor Rolleston, Mr. Evans, Mr. Hyde Clarke, Mr. Burke, the President, and others took part.

Mr. Gill, in reply, said—I have spent about twenty-two years in the Hervey group, in the South Pacific. Shut out to a great extent from the civilised world, I enjoyed great facilities for studying the natives themselves and their traditions. I found that they had two sets of traditions and songs—one referring to their gods (of these you have heard a specimen this evening) and to the supposed experiences of men after death; another relating veritable history. In such researches we cannot be too careful to distinguish history from myth. But when we find hostile clans in their epics giving substantially the same account of the past, the most sceptical must yield to the force of evidence. The result of my researches is the

* Mr. C. F. Wood, who has spent several months on the island, which is throughout its whole extent broken up by hills, not to say mountains of volcanic origin, considers that the tombs mentioned by Mr. W. W. Wood are dolmens, and they are to be found all over the island, even in parts not now inhabited. The same form of tomb is still in vogue, but built up of small stones.

belief that the Hervey Islands have been inhabited not more than six centuries. 1. As to queen island of the group, ***Rarotonga***, a celebrated chief, Makea-Karika, sailed from Manuâ, the most easterly portion of the Samoan group, and first discovered and settled on Rarotonga, so named in memory of "Western Tonga." Eight times did this daring voyager traverse the ocean, the last time to return no more. It is believed that he perished in a storm. But the colony he founded prospered under the rule of his son. This is well known at Manuâ as well as at Rarotonga. When the missionary Williams discovered Rarotonga in 1823, the 24th Makea was king of the island, or, as it is still called, "the Tongan kingdom." "Makea" is a title of office, like "Pharoah" and "Candace." Allowing to each a reign of twenty-five years, we attain a total of 600 years; but from what one knows of savage life twenty-five years is too long a period. There is on Rarotonga a lesser chief, Tinomana, likewise descended from Makea-Karika. For nine generations one chief ruled the island in peace; in the tenth generation the island was split into two hostile camps. In the year of the discovery of Rarotonga, the 19th in direct succession from Makea-Karika was then ruling over the lesser tribe. Allowing, as in the former instance, twenty-five years to each chief of the subordinate branch, we obtain a total of 475 years. 2. A hundred miles north of Mangaia is the island of ***Atin***, which exercises sovereign authority over the lesser islands of Mitiaro and Mauke. Mana, the old chief and wise man of Atin, acknowledged that his ancestors sprang from the renowned Makea-Karika family. Being a younger branch, the oppressive law of primogeniture induced the first chief of Atin to seek a home elsewhere; so he called together his vassals and departed to the comparatively barren isle, still in possession of his descendants. 3. With regard to the history of ***Mangaia***, a great difficulty in settling the question arises, from the fact that those restless, fierce islanders were no respectors of kings. Most of their royal personages were, from time to time, murdered by their subjects at the instigation of the priests. These crafty fellows well knew that their own persons were generally safe on account of their ghostly functions. We turn, then, from the list of kings—in which there are numerous *interregna*—to the well-known succession of priests of the three principal gods of Mangaia. This gives us only *nine* very long lives; or, to speak with absolute correctness, seven *very* long lives and two shorter ones (of murdered priests). Allowing each priest to discharge his functions during the long period of fifty years, we get a result of 450 years. That the traditions of the Hervey islanders are of real historical value is shown by a circumstance which took place during my residence. The old men of Rarotonga often said in my hearing, that whenever a certain venerable tree, named Tuarea, should fall, underneath would be found "the seat of Tau," one of the original settlers from Samoa. In 1867 this aged tree fell with a tremendous crash on a still day; underneath, imbedded in the trunk, was the stone seat of Tau! It seems that when the island was first settled a young *callophyllum inophyllum*

was planted in a marae near the stone seat of this lesser chief, and in time overgrew and covered it. The whole subject is full of interest, and deserves an exhaustive treatment.

After some remarks from Mr. PARK HARRISON and the PRESIDENT, the meeting separated.

FEBRUARY 22ND, 1876.

J. PARK HARRISON, Esq., M.A., *Treasurer, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of the following members was announced:—HENRY BLENCOWE CHURCHILL, 2, Raymond Buildings, W.C.; EDWARD F. STEVENS, F.S.A., Trustee and Honorary Curator of the Blackmore Museum.

The following list of presents was read, and thanks ordered to be returned to the respective donors:—

FOR THE LIBRARY.

From the SOCIETY.—Schriften der Physikalisch—Okonomischen Gesellschaft Zu Konigsberg, 1873-4.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. No. 5, 1875.

From Prof. F. V. HAYDEN.—Bulletin of the U.S. Geological Survey of Territories. No. 5. Miscellaneous Publications, do. No. 5.

From the EDITOR.—Archiv für Anthropologie Achter Band. No. 6.

From the AUTHOR.—Notes on Early Social Grades in England. By J. Boult.

From the EDITOR.—Revue Scientifique. Nos. 33 and 34, 1876.

From the EDITOR.—Materiaux pour l'Histoire de l'Homme. Jan., 1876.

From the HUNGARIAN ACADEMY OF SCIENCE.—Monumenta Hungariæ Archæologica, iii. Kötet, 1 Resz.; Archæologiai Kozlemenyck, ix. Kötet, 11 fuzfet; A. M. T. Akadémia E'vkönyvei, xiv. Kötet, 2-6 Darab; Monumenta Hungariæ Historica, xviii.-xxiv. Kötet, Okmánytárae; Do., Kötet 22, 24, 27, and 31, I'rók; 11 Rákóczi Ferencz Levéltára, 1 Oszt., 2-4 Kötet; Do., 11 Kötet; Tortenelmi Tar xix.-xxi.; Tortenelmi Emlékek, ix. Kötet; Repertoriuma, Elsö Osztaly I.; Erlekezesek a Törteneti Tudomanyok Rorebol. Kötet 2-5, 1873-5. Ertesitoje, 1873-5; Nev-es largymutato, 1867-74; Almanach, 1874-5; Général Catalogue.

From the EDITOR.—Nature (to date).

The following paper was read by Mr. Brabrook in the absence of the author:—

On the ETHNOGRAPHY *of* SCOTLAND. By Rev. JOHN EARLE, M.A.

1. IT is a common remark that the Scotch and the Norwegians are very much alike. As I write, I have at my side a sixpenny periodical, in which a recent traveller in Norway dilates on this likeness through nearly two columns of print. I remember quite enough of my own first impressions in Norway to profess myself a sharer in this popular opinion. If I were to imagine an ideal Scotchman, tall, fair, square, open, fresh, friendly, cautious, inquiring, practical—though I have seen many such in Scotland, and, indeed, one in particular presents himself now before my mind—yet I think I should give this candidate the second place, and find my *beau idéal* in the person of a gentleman of the name of Vetlesen, in whose house I was an inmate while I sojourned at Christiania. So much by way of preliminary, that the passing observer sees, or fancies he sees, a family likeness between the Scotch and the Norwegians.

Popular impressions of this sort are little regarded unless they find support in scientific judgment, but when they do find such support they repay it well, by the confirmation they afford to the conclusions of science. In the course of certain philosophical studies, to which I shall recur by-and-by, I was led to think more than I had ever before done of this old comparison between these two nations, and to feel a strong curiosity to know the opinion of the best ethnologists as to whether there was anything in this popular opinion or not. In this attitude of mind I had recourse to my friend Dr. Beddoe, and asked him the question, and he, without hesitation, said he thought there was more than superficial ground for it, and he invited me to his house to see some Norwegian photographs. The consequence of that invitation was that I saw a fine set of portraits, taken by the eminent artist Tidemand, and selected by him as specimens of the chief types of physiognomy in the neighbourhood of Bergen. Dr. Beddoe considered that he could match almost every one of them in Scotland, and I, with my smaller experience, was able to follow and verify most of his observations. But much as these characteristic portraits offered to confirm the opinion which I was testing, it was the firm hold which I perceived it had on the experienced mind of Dr. Beddoe that made me think it worth my while to collect and arrange the evidence which had revived my interest in the subject.

2. Leaving now the aspect of the people and turning to the page of history, we find a current of migration which adds

strength to the foregoing observations. Dr. Rolleston* has remarked that where we find a line of active migration in historic times, the presumption is that it was in action also in the previous period, of which we have no record. Now we can confidently say that for several centuries after we begin to have records of the relations between the coasts of Scotland and those of Norway, the evidence of history is uniform in its representation of a tide of adventure and colonisation and conquest from the shores of Scandinavia to the shores of Britain. Our earliest records of this movement are of the eighth and ninth centuries. How much earlier it may have been in action, and with what volume, we cannot say. But the ninth century appears as its period of greatest activity, the period known as the age of the Vikings (Vikinga—Öld): the century of the Danish settlements in England and of the Norsk settlements in Iceland. A Saga tells of a conquest of more than half of Scotland by Norsemen, but it may be that Scottish historians are right in treating this as the language of exaggeration. Still, in an estimate of the value of such a statement, we must bear in mind that it is found, not in one of the romancing Sagas, but in one that is in its purport as documentary as our Domesday—the Landnáma-bók, or Book of the Colonisation and Land Settlement of Iceland. The Landnáma-bók was written by Ari Fródi (born 1067, died 1148), an historian who certainly cannot be said to have been beyond the reach of those motives which lead to exaggeration, seeing that he was descended from those very kings that conquered in Ireland and Scotland; but, on the other hand, he owed the loyalty of truth to his family records; and the force of this noble literary sentiment in the Iceland of the eleventh century was far greater than we might be disposed beforehand to imagine. He narrates that King Olaf the White conquered Dublin and Ireland; and that his son, Thorstein the Red, in alliance with Sigurd, first Earl of the Orkneys, conquered Caithness, Sutherland, Ross, and Moray, and more than the half of Scotland, over which Thorstein then ruled as king, until he was betrayed and slain by the Scots. In the more ordinary Saga-literature, that is to say in the story-telling Sagas, there is an expression of frequent occurrence, which seems to carry evidence of great value for our present inquiry. When the scene of the narrative is in the old mother country of Norway, as it often is in the Sagas, and when a man has got himself into trouble, or difficulty, or danger, so that whether for fear of the law, or for dread of an angry neighbour, he feels unsafe in his own home-

* President of the Anthropological Department at Bristol.

stead, the natural way of escape is to "harry west." Again, when a Norwegian was weary of the routine of agricultural life, and he wanted a little change and excitement, he would fit out a ship, take a season on the sea, and he also would be said to "harry west." This expression indicates a state of relations between the coasts of Scandanavia and those of Britain. That would appear to have been remarkably constant. And the results of this long-continued relationship are permanently established, and open to observation in the present day.

The following example is drawn from a comparison of Lincolnshire with Denmark, and we know that these two countries stand in a geographical relation to each other like that of Scotland to Norway. The coast of Lincolnshire is due west from the coast of Denmark, and there is in this latitude a remarkable identity of character observable between the populations of the opposite sides of the German Ocean. From the ninth and tenth centuries down to the present day that identity has continued to display itself. In the ninth and tenth centuries those place-names ending in *by* and *thorpe* were set which are so numerously identical with the Danish names in *by* and *thorp*. In the present year a friend of mine, a native of North Lincolnshire, was travelling in Denmark, and he wrote home to a relative in North Lincolnshire, saying, that when he was on the boat between Kiel and Copenhagen he could have fancied himself on the Trent steamer from Gainsborough to Hull; so identical were the aspect of the people and the general accents of the conversation.

With such a fact as this before us, we might take it as a probable inference of analogy that the children of the Norwegian fiords were very conversant with the coasts of Scotland, an inference which is both illustrated and corroborated by that significant expression of "harrying west." But we are not in this matter reduced to mere inference. We possess a recorded notice of the fact, and that in a tenth century chronicle, of the highest quality. In the Saxon chronicle (A), under the year 924, the population of Northumbria is classified in a remarkable passage. And here let me note that by Northumbria in the tenth century was meant the whole stretch of country from the Humber to the Forth. These are the words of the earliest of our native chronicles, the Saxon Chronicle of Winchester:—Ealle pa pe on Norp hymbrum bugeap, ægper ge Englisce, ge Denisce, ge Norpmen, ge opre. In modern English—*All those that dwell in Northumbria, whether Anglian, or Danish, or Northmen, or others.* And although this quotation does not expressly state that Northmen were settled upon any part of that area which we now call Scotland, yet it must be admitted that if there were Norsk settlements further south, the probability of

such settlements to the north is a reasonable *à fortiori* inference. In the Western Isles we know that the Scandinavian population obliterated all trace of any other, and that the whole of the western coast, down south so far as Cumberland, bears traces of Norwegian occupation. And the influence of this neighbourhood was not resisted by the Gaelic population, for we are told by Mr. Burton* that a strong infusion of Norsk superstition had found its way among the Celtic-speaking Highlanders. If there is any part of the coast of Scotland which our evidence seems manifestly to touch it is the eastern coast, and in respect of this we may fall back upon that apparently old, because proverbially established Norwegian habit of "harrying west," and interpret it in the light of our President's remark, which I appealed to before, namely, that the path of historic invasion indicates with the highest probability the line of such migrations and invasions as took place before the historical period.

For considerable though the evidence of history is as to the influx of Norwegians into Scotland, we still feel ourselves urged to extend that evidence still further by analogy, and to carry it to its utmost legitimate stretch, when we look either at the physical aspect and family likeness, of which we have already spoken, or at the strongly characterised national language of the people of Scotland, to which, as to the more special material of this communication, I now proceed.

3. It has often provoked the curiosity of the philologist to know what was the source of the peculiarities of the Scottish language. For a long time it seemed enough to say that the Lowland Scottish had received its stamp from the dialect of the Angles, of which it is the descendant and the modern representative. But the more we become able, in the progress of philology, to form a definite estimate of what the Anglian dialect really was, the more inadequate does this explanation appear, as far as regards the salient characteristics of the Lowland Scots. If we look towards the Gaelic on the mountain sides, this may, and does, supply an elucidation here and there, but it offers no stream of influence such as is needful for the purpose of our inquiry. It had indeed been suggested that the true source was Scandinavia, and I imagine that Dr. Dasent may have been the first to advance this opinion; at any rate it

* The passage is as follows:—"Many of the old Norse superstitions lingered in Scotland long after the established ascendancy of Christianity. They were the object of uninterrupted reprobation, first by the Romish, and next by the Reformation clergy. The General Assembly had to denounce them even in the eighteenth century, and they call forth many lamentations from the clergymen who compiled the two Statistical Accounts of Scotland. They have prevailed chiefly among the Celtic-speaking Highlanders."—John Hill Burton, "History of Scotland," vol. i. p. 245.

is with one of Dr. Dasent's writings that I associate my earliest appreciation of the importance of this suggestion. But now the publication of a thoroughly good Icelandic dictionary has removed the question from the realm of authority and has brought it within the sphere of that scientific induction which may be pursued by any reasonably qualified investigator.

Vigfusson's Icelandic Dictionary has supplied the material to prove that the striking features of the Scottish language are neither more nor less than pure Norsk. And here I wish to be exactly understood. I am not engaged in an examination of the broad foundations of the Lowland Scots' dialect, but in the salient and striking features of it, and when I say "striking," I mean such words or forms as specially arrest the attention of the Englishman. This therefore leaves untouched whatever English has in common with Scotch, whether from the original sisterhood of the immigrating tribes in the fifth century, or from their common obligations to the Scandinavian source. Although the English language has drawn much from her Scandinavian settlements, yet the Danism of the Scotch is so much greater that almost every one of those expressions which we call distinctively Scottish will be found to be more or less open to the suspicion of Danish influence. The following list of examples will be sufficient to illustrate my meaning:—

bairn	ken
big (=build)	lax
carline (=old hag)	sackless
eldin (=fuel, firing)	spaeman
ettle	spaewoman
fey (=do, make)	speer (=ask)
gar	wadset (=mortgage)
greet (=weep)	

I would not claim for these examples a greater weight of evidence than strictly belongs to them. It is quite certain that a good many words may pass from one language into another without involving any hint of relationship between nations. We are quite unconnected with all the Arabic-speaking nations, and yet we have a list of good and distinct Arabic words in our language. Such are admiral, alchemy, alcohol, alcove, algebra, alkali, almanac, barbican, cypher, elixir, magazine, nadir, orange, zenith. The fact is that when we apply the philological argument in ethnological reasoning we must learn to make distinctions between sorts and qualities of words, and even to graduate them upon a scale of relative estimation. If we consider these Arabic words one by one we shall easily recognise that they are words that were for the most part

closely associated with objects of wide and common interest in science, art, learning, invention, discovery, commerce; that with the transport of such things the names also were transported; and that in this way words can pass through one or more intermediate language and get planted in a remoter language which lies beyond all chance of contact with the original source of the movement. The Scottish words which I have given above are not of this sort; not words likely to have travelled in any such a manner, though they two are very various in the weight of evidence which they severally impart. The weightiest among them are these—eldin, ettle, gar, greet, ken, lax, spaeman. Of these I will select one only for comment. The Teutonic languages have two words for action, namely, *do* and *make*, German *thun* and *machen;* but neither of these words are known, or ever have been known, in Scandinavia. Instead of these two the Scandinavians have one word only, which in Icelandic is *göra*, in Swedish the same, in Danish *gjöre*, and this word it is which has been transplanted into Scotland, and which has there taken the form *gar*. Now my observation is, that this word lies very close to man, to human life; that it is not so likely as the Arabic words above to be carried with a new treatise or a cargo of goods to a new country, or to filtrate through intervening nations and get adopted by a strange nation beyond—in a word, that nothing but a manifold intermixture with Scandinavians could have made the Scotch adopt such a word as *gar*. And when we consider that the original vernacular of the Lowlands possessed both of the verbs *do* and *make*, in the enjoyment of which they really could not be much in want of a third of the same general signification, we find a difficulty in comprehending how *gar* could ever have got so stubbornly rooted as it is, without supposing at some time a very great and almost a preponderating population of Northmen, not, of course, in every part, but in those parts that proved to be of influence in the setting of the national speech.

The next stage of our evidence shall be the Scandinavian elements in the local names of Scotland. In the whole area of the kingdom of Scotland there are to the English eye two groups of strange names, one absolutely alien, namely, the keltic, the other kindred, though strange; and these are Norwegian. These latter are so generally admitted to be of Scandinavian origin, that a mere glance at this part of the subject may be thought sufficient. Such terms as *dale*, *fell*, *firth*, *gate* (in the sense of street), *gill*, *haugh*, as in Maxwellhaugh. These and some others are too well known to require enforcement. And if I add a few more remarks on this point, it is

not so much for the sake of strengthening the philological argument as for the light which it reflects upon the history of the Norsk settlements, and the proof it affords that Scotland is almost fringed around with their traces. The names hitherto mentioned are all at home in the South of Scotland. If now we look at the north, Caithness is a Norsk compound. The Icelandic form is Kata-nes, and it means ship-promontory. And in Caithness we meet with that strong mark of the presence of Norsemen, a river-name ending in *á*, namely, Brora. The name of Sutherland (southernland) is hardly likely to have been so called by any but Norsemen, for it has nothing north of it on the mainland except Caithness, and therefore it appears from its very signification to have been dictated by strangers; but, in addition to this, the form itself is pure Norsk, viz.: *Sudrland.*

The same northern standpoint is manifest in the Norsk name for the Hebrides, which, from a Scottish point of view, were, and still are, called the Western Isles, but which the Northmen called the Southern Islands—Sudr-eyjar, and this Norsk name still lives in our ecclesiastical nomenclature in the title of Soder and Man.

Hitherto our evidence has been limited to one sort of words, of various quality indeed as to the force of their evidence, but still all belonging to that coarser and more material-bound division, which we may call by the common name of presentives. These examples, it is true, when considered together with what we know of the historical movements, and, further, with what has been observed of the family likeness, might be thought sufficient to build up an argument of strong probability as to the fusion of the native Anglian metal with no little of the Norwegian iron. But at this stage the argument is so far from being complete, that, had I no more to offer, I should hardly have felt myself justified in asking you to favour me with your patient attention. I have, however, a more important set of facts to submit than any hitherto noticed.

But before explaining, I would ask leave to quit the subject for a moment while I advert to our own English language, in order to fetch therefrom a sort of preparatory illustration. It has already been said that English is itself deeply tinctured with the Danish, and that this Danish is substantially the same language as the Norsk, which is found to have left so many traces in the Scotch. Suppose now we were challenged to prove that there is much Danish in the English language! It would be very easy to produce a list of words, such as ale, bridal, call, dream, egg, fellow, gain, hunting, ill, knife, law, meek, ransack, sky, take, ugly, window. We might muster three or four times

as many as these, and a very pretty study it would make to hunt them up and detect the proofs—on the one hand, proofs affirmative that they are Danish, and on the other hand, proofs negative that they are not Saxon. Thus, ale is the Danish for the Saxon beer, and bridal means the bride's ale, or banquet. The word ill is Danish, where the Saxon form is evil. So again, sky is the Danish for heaven. The next word, take, has so prevailed that it has left no room for its old Saxon rival and equivalent—*niman* (German *nehman*), but the native echo of it lingers in Shakspeare in the name of Corporal Nim. Suppose now we could, with equal clearness, circumstantiate some fifty or sixty Danish words in use among us, what would be the force of their accumulated evidence as compared with this one little, and, perhaps, at first glance insignificant-looking fact, namely, that we received ARE from the Danes? In whatever degree this fact appears despicable, in that very degree it is important. It is precisely the insignificance of the thing that constitutes its evidential value. It is very easy to catch from foreigners a number of outside words, like those Arabic ones above. It requires a nearer intercourse to catch words like call, dream, fellow, gain, law, ransack, sky, take; yet a hundred such as these weigh little in comparison of that silent and unnoticed change, by which we came gradually to drop saying *they be* and to take up the habit of saying *they are*. In general terms the truth is this, that symbolics are far slower of communication than presentives; or, in other words, they demand a far more intimate, proved, and multiplied intercourse. Time will not permit me to reason out this proposition. I must trust that it will explain itself to every hearer who is sufficiently interested to reflect upon it. And with this preparatory illustration, drawn from the relations of the English to the Danish, I return to my proper subject, the national language of Scotland.

This language is saturated with Norwegian symbolics to the very core, and as it is to such words, more than to any of those yet enumerated, that it owes its own peculiar idyllic beauty, so also is it from the presence of such words that the philologer will draw his surest conclusions about the Scandinavian relationship of the sister nation. One of the most prominent examples is the auxiliary *maun*, which variably corresponds to our *shall*, or *will*, or *must*. Thus, "I maun gang"—"ye maun do it." This is the Icelandic MVNU, under which word Mr. Vigfusson has this remark: "Hardly any verb is more frequent."

From an auxiliary which is quite strange to the English language I pass to one which we share with the Scotch, both nations having borrowed it from the Norse, and having applied

it to use severally in their own fashion; and this diversity of application (let us note in passing) helps to prove the foreign character of the original. I speak of the auxiliary *get*, and I will quote two examples which are distinctively Scottish—"Ye'll get that"—"I will come and meet you if I can get." The manner in which this auxiliary is used in England is so perfectly distinct, that the Scottish use of it is one of the things that piques the curiosity of the English traveller.* The next instance shall be a very remarkable preposition, namely, *til*. The Scottish peasant says, "til Glasgy," "til Eddenburry," just as the Norse peasant says, "til Bergen." And here let me note (as above) that while this word has made its way also into English, our English uses of it are quite a different set from the Scottish ones, a phenomenon not to be expected if the word had been a common ancestral heritage, and only to be expected if the word had been separately admitted from a foreign source.

I have yet to speak of one very delicate and intimate result of the admixture of the Norwegian with the other races that have contributed to form the Scottish nation. Where the Scotch has the same words as the English, but those words differing in sound, with a peculiar vocalisation, the Scottish vocalisation will be found in a considerable proportion of instances to be Norwegian. Thus *mair* (for *more*) is just the same sound as the Icelandic *meir; ane* (for *one*), as the Icelandic *ein; stane* (for *stone*), as Icelandic *stein*. As the word *louper*, in "landlouper," differs from our *leaper*, so does the Icelandic *hlanpa* (to leap) differ from the Saxon *hleapan*. The Scotch say *nowt* for *neat*, cattle, and this is the Icelandic *naut*.†

The examples which I have given will prove, I think, to be typical examples; and there are more of them to be found by the patience of the inquirer, with the valuable help of Mr. Vigfusson's dictionary.

4. I have now only to gather up the results. Our Danish and Norse districts are characterised as the meeting ground of the two great and long divergent branches of the Gothic family, the Teutonic and the Scandinavian. From East Anglia, up our eastern coast to its northern extremity, the Scandinavian traces are still to be found nearly all the way; and from that northern extremity, down by the west through the Hebrides to the Lake District, there is a continuous fringe of northern

* For a proof of this, see *Quarterly Review*, No. 278, October, 1875, p. 443.

† I know but of one similar case in the English language. The Saxon *swân*, swineherd, is now represented by the form *swain*, which is not the natural modification of *swân*, but must have been influenced by the Danish analogue *sveinn*.

settlements, and the Norsk race must have touched, and even penetrated, at almost every point, having made more lasting impressions, however, and having occupied a deeper margin of territory in some parts than in others. The irregular and broken area thus vaguely adumbrated may well be compacted by the ethnological thought, that this is the area wherein the supervention of the Scandinavian upon the Teutonic occupation give rise to a new type of physiognomy, of character, of language, and of poetry.*

It is this superposition of a Scandinavian upon a Teutonic population that constitutes the general ethnological basis throughout all this irregular length of coast, always excepting the Gaelic part of the west of Scotland. But similar as is the population of these districts, in so far as Scandinavians have everywhere mingled with an Anglian population, yet the subsequent fortunes of the intrusive language has been very different in the districts north of the Tweed from that it has been on the south. The political boundary line between England and Scotland has had a great linguistic effect. It is not too much to say that the existence of the Scottish language is due to this political separation. In the southern part of the island the continual interchange of communication between the Danish and the Saxon districts ended in the dilution of the former and its inclusion as a modifying element, not always easy to trace in the modern English, which sprang into being from the multiform congeries of the Frenchified Saxon dialects.

Localities there are in England which still retain the very forms of the original Scandinavian deposit, and pre-eminent among these is Cleveland, whose dialect has been admirably delineated by Mr. Atkinson. But as a general rule the Danish has been dispersed with a stimulating and quickening effect throughout all the parts and members of the English language, and being present like an infusion rather than in palpable

* Something and, perhaps, much of the peculiar flavour of English poetry, that quality which distinguishes it, and which is gaining for it the appreciation of foreigners, is to be traced to our Scandinavian districts. The best of the English ballads, the minstrelsy of the Scottish Border, the lyrical and pastoral poetry of Scotland, are all of one type, and that type one that has silently modified the poetry of England. The occasional touches of northern diction in our greatest poets are indications of their northward debt. In the discussion which ensued on the present occasion, Sir Walter Elliot called attention to the northern expressions in Spenser, and he quoted the line,

"Tell me, good Hobbinall, what garres thee greete."

From Shakspeare we may quote the northern *til*:—

"The nightingale, as all forlorne,
Leaned her brest up til a thorne."

substance, it often requires almost a chemical analysis to detect it.

In bold contrast with all this is the state of things in the Scottish language. There the Norsk element shows itself substantial and undiluted, and it has taken possession, not only of the high places of the language, as Latin and Greek have done in modern English, but it has even made its way into the recesses of the structure and tinged the vocalism of the words in a manner, not indeed equal in degree, nor yet even quite the same in kind, but nevertheless in a manner which recalls and admits of comparison with the deep and intimate association of the French with the Saxon in the production of the English language.

The opportunity for bringing such a formation as the Scottish language to a state of maturity was afforded by the protecting effect of the political boundary during the period when that language was in a state of growth, and by this means there has been garnered for scientific use an ethnological evidence which extends our view beyond the limits of recorded history and in the same direction; for the analysis of the Scotch language will assuredly be found to bring out more and more the proofs that it is the great and permanent memorial of the overlapping of the Teutonic and Scandinavian races.

Discussion.

Mr. Walhouse said—The word "gar" having been remarked on in the discussion, I may observe that in its sense of an enclosed space—gar, garth, yard—it is one of the most ancient and general of words, running through many languages from Persia to Scandinavia, and appearing in almost all old European dialects, *e.g.* Brit. Cornish, *gardd*, M. Goth, *gards*, a house; Polish, *grodz*, a stable; Franc., *gardo*, Old German and Frisian, *gaerd*, a garden; Swed. and Lapp., *gaerd*, *gaerde*, an enclosed space; Anglo-Sax., *geard;* Old English, *gherd*:

> Sigh I thee not in the *gherd* with him?
> *Wiclif's New Testament*, St. John xviii.

As a verb, signifying doing or carrying anything, it has a different root, and may possibly be connected with *kar*, a derivative from the Sanskrit root *kri*, to cause or do, whence *karma*, *kartta*, factum, factus, &c.; a root permeating all Indo-European languages, and appearing, Borrow thinks, in monger, in such words as costermonger, ironmonger, &c.

Mr. J. P. Harrison said that Mr. Earle's views attracted a good deal of attention, and were received with considerable favour when the paper was read last year at Bristol. He had himself long considered that the patronymic *son* in Scotland, and more especially in the shires bordering on the Frith of Forth, indicated

Danish descent. He alluded to names like Paterson, Anderson, Nelson, Jameson, &c. It was so, notably, in Lancashire and other Danish counties, whilst purely Saxon and Anglian names were rare. The converse was the case in the south. In the home counties, however, the movements in the population have introduced great changes.

After some remarks from Mr. HOWORTH, Professor HUGHES, Mr. LUKE BURKE, Mr. JEREMIAH, and Dr. SPRATT, the meeting separated.

The following Notes on the Human and Animal Remains found at Cissbury were, in substance, read by Professor ROLLESTON at the meeting on November 23, 1875 (Journal, vol. v. Part iii.), but their publication was unavoidably postponed to the present occasion.

NOTE *on the* ANIMAL REMAINS *found at* CISSBURY. By Professor ROLLESTON, M.D., F.R.S.

THE most surprising, though by no means the most important result of the examination of the animal remains found in the excavations at Cissbury was the demonstration of the existence amongst them of the bones of the wild ox, *Bos primigenius*, and the wild boar, *Sus scrofa v. ferus*. It is true that we have abundant evidence from the consilient utterances of poets, historians, and naturalists, from the names of men and of places, and from other quarters also,* for showing that these wild animals persisted into quite recent historical times. Still, for all that, it has been at least rare to find their bones in any prehistoric excavation. I had never been so fortunate as to meet with any such remains so placed till my experiences at Cissbury. It had never seemed difficult to me to account for this absence, the presence of the remains of domestic animals sufficiently explaining it on the principle of "least action," a principle which commends itself as much to savage as to sage. Hence, when I was told that in the pits excavated at Cissbury by the late Mr. Tyndall, of Brighton, the bones of *Bos primigenius* had been found in considerable quantities, as also those of *Sus scrofa v. ferus*, I felt and expressed a great anxiety to see them. This wish was gratified and my scepticism removed by the kindness of my friend Mr. Ballard, of Broadwater, who presented me with the bones now to be described as having come from Mr. Tyndall's pit (see p. 364 of "Journal of the Anthropological Institute," Jan. 1876, fig. 1, *k*, Plate xiv.).

* See Dr. J. A. Smith, "Proc. Soc. Ant. Scot.," 1871—72, ix. p. 667.

I. *Remains from Mr. Tyndall's Pit.*

1. Distal end of left humerus of *Bos primigenius*, with some marks of burning upon it. This fragment consists of the condyles and so much of the shaft as to bring it up to a length of 7·7 in. Its large proportions are the first point which strikes the eye, bringing to mind Cæsar's words as to the urus of his day, *magnitudine paullo infra elephantos*. Its brightish, glazed appearance comes secondly under notice; and, thirdly, the sharp definition of its angles, and processes, and articular surfaces. Looking at it a little more closely, we see a beautiful polygonal reticulation standing out upon the bone, over the surface which gave origin to the lowest fibres of the brachialis anticus. Just such an appearance is presented by the neural arch of the third cervical vertebra of *Bos primigenius* figured by Rütimeyer, Tab. iii. fig. 3 of his "Fauna der Pfahlbauten," and commented upon by him at pp. 15 and 72 of the same work. They are to be seen, but only in a rudimentary form, in the humerus of a fine Chillingham bull lately presented to the Oxford University Museum by the Earl of Tankerville, immediately above what, in man, would be called the coronoid fossa. The thickness of the cylindrical wall of the humerus is 20 millimeters. The extreme width at the condyles is 120 mill., as against 83 in the Chillingham bull. The circumference, taken at a tangent to the apex of the facet for the head of the radius, is in the Cissbury bull 200 mill., as against 139 mill. in the Chillingham bull.

2. The measurements of an ungual phalanx from a fore-foot of the Cissbury bull illustrate the axiom *ex pede Herculem*, and will show anyone who will construct a couple of triangles with the subjoined two sets of dimensions how greatly the ancient wild bull exceeded in size what Rütimeyer holds to be its modern representative.

Fore ungual phalanx.	Cissbury Bos. Mill.	Chillingham Bos. Mill.
Extreme length along inferior edge ..	90	72
Extreme length along upper edge ..	70	53
Height	64	48

3. Fragment of tibia, proximal end, *Bos primigenius*. Thickness of cylinder of bone, exclusive of spongy diploë, 15 millimeters.

4. Fragment of femur, proximal end, *Bos primigenius*. Thickness as above, 14 mill.

5. Two fragments of frontal bone of *Bos primigenius*, with strikingly glistening and dense textured walls to frontal sinuses.

6. Fragment of rib of *Bos primigenius*. Its extreme depth is 53 millimeters, as against 45 mill. in the Chillingham bull.

7. Upper molar teeth, *Bos primigenius*.

8. Part of lower jaw of wild boar, *Sus scrofa v. ferus*, with second and third molars *in situ*, and the last just come into use. The bright glazed appearance characteristic of the wild variety of *Sus scrofa* is well marked on the outer, but eminently well on the inner, surfaces of the walls of the jaw.

Very many more bones than these were procured by Mr. Tyndall from his pit at Cissbury. His lamented death has, I believe, caused many of them to be irrecoverably lost. Those described are all that I have access to.

The presence of these wild animals in Mr. Tyndall's pit may be explained by the usually mistranslated* words of Julius Cæsar, "Comm. de Bello Gallico," vi. 28, when writing of the capture and slaughter of *Bos primigenius* by the Germans: "Hos studiose foveis captos interficiunt. Hoc se labore durant adolescentes," &c. These five latter words appear to me to mean that a good deal of trouble must have been taken and a good deal of risk run in getting the wild cattle to the pitfalls; merely butchering the animals after they had tumbled in would not harden a young man, at least in the sense in which Julius, one of the least cruel of a cruel people in a cruel age, would have wished to see a young man hardened. Hurdles of gorse probably were arranged on the principle of the wicker-hoops in a decoy, and it is easy to see how, by such a plan, eked out, perhaps, by the firing of heaps of the same useful material, a wild bull or a herd might be driven over a pitfall.

II. *Remains from "Large Pit."*

I come, in the second place, to the consideration of the animal remains found in the "Large Pit" marked *m* in fig. 1, Plate xiv.,

* For example, Canon Tristram, in his "Natural History of the Bible," 1867, p. 148, translates them thus: "The hunters are most careful to kill those which they take in pitfalls;" and the Rev. J. G. Wood, in his "Bible Animals," p. 128, renders them thus: "These, when trapped in pitfalls, the hunters diligently kill." Very little care or diligence would have been required for killing, though a very great deal would have been required for keeping alive, a wild ox which fell into such a pit as Mr. Tyndall's, thirty-nine feet deep. If the writers just quoted had recollected that in times previous to the invention of pumps it was a very common thing for "an ox or an ass to fall into a pit," not *studiose*, but *casu aut forte fortunâ*, they would have seen that the word *studiose* should be taken with "*captos*." So common, indeed, in those times, were such accidents, that Maimonides has written at great length about them in his treatise "De Damnis," a well-known work of great authority. Or if they had read a few lines more of Cæsar's in the same connection, they would have come upon the words "Hæc (cornua) studiose conquisita," which might have suggested a truer rendering. It is curious to note that Cuvier, "Oss. Foss.," iv. p. 113, 2nd Ed., omits the words in question altogether; and Gervais, "Zoologie et Palæontologie Francaise," p. 131, 1859, who would have done well had he followed Cuvier in some other matters, follows him in this implicitly. The really "learned" member for the City of Oxford, Sir Wm. Harcourt, drew my attention to the splendidly illustrated edition of

given in sections and plan in Plate xvii. of Colonel Lane Fox's paper in the number of this Journal for January, 1876, vol. v. No. 3, and described by him pp. 379-382, *loc. cit.* The entire number of bones from the large pit which I have before me for identification amounts, exclusively of a number of deer-horn implements described by Colonel Lane Fox, and exclusively of five molars of horse found lying superficially, to about thirty. Of this number, ten are fragments of bones of the domestic ox, *Bos longifrons*. Ten upper jaw molars from the same animal are likewise counted in it, and enable us to say that at least two individuals of this variety of *Bos* are represented in this collection; five are bones of the domestic pig, *Sus scrofa v. domest.*, and give proof of the presence of two individuals; one bone only testifies to the presence of the red deer, *Cervus elaphus*, so abundantly represented by its horns; the roe, *Cervus capreolus*, is represented by a piece of frontal bone carrying a nearly perfect horn, and also by a seventh cervical vertebra. A large part of the skull of a goat, *Capra hircus*, is labelled "Red seam, large pit, 9 ft. 6 in. beneath surface."

The first remark to be made about this collection of bones is that the smallness of their number is an argument in favour of the pit having been filled up very soon after it was first excavated. To this conclusion other considerations have been shown (see "Journal of Institute," *l.c.* pp. 381 and 386) to point. Eight bones of the thirty bear labels which show that they were found below the level of the "red seam," *i.e.* below the level to which the first "filling up" reached. These eight bones belong to the roe, the domestic ox, and the goat respectively. There is one bone, a nasal, which might have belonged to *Bos primigenius*,

the "Commentaries," published by Jacob Tonson, in 1712. On referring to it, I found M. Gervais' error anticipated, Cæsar's description of *Bos urus* being illustrated by a magnificent, however misplaced, picture of a—Bison. Nor do I entirely agree with the translation given by Mr. Edward Lee (p. 13 of his charming little book, "Excavations at the Kesserloch," by Conrad Merk; translated by John Edward Lee. Longmans, 1876): "They (the natives) catch them in pitfalls made with great care, and then kill them." That great care was used in making and covering over the pitfalls I do not dispute, but great care, I am sure, must also have been used to secure that the animals ran over them. Julius says neither more nor less than that the uri are taken, with great trouble, by means of pitfalls and killed; and that the great trouble includes the riskful process of driving the herd, as well as the very safe one of digging the pit, the context seems to me to indicate. Hence I demur also to the free rendering given by Dr. J. A. Smith in the "Proceedings of the Society of Antiquaries of Scotland," ix. p. 595: "The man who killed the greatest number of them, *even by the pitfall*, brings the horns as an evidence of his prowess, and is highly applauded by his countrymen,"—though this interpretation, like Mr. Lee's, shows that the author had striven to realise to himself the circumstances hinted at rather than described by Julius, and did give the greatest man of all antiquity, if not of all time, credit for writing something like common sense.

but it would not be safe to speak positively as to thus identifying it. And dismissing it from consideration, we have from this "large pit" three domestic animals, the cow, the goat, and the pig, accompanied by two wild ones, the stag and the roe. The absence from this particular collection, and, indeed, from the entire Cissbury series which has come into my hands, of the dog, would be remarkable if we did not bear in mind the short time for which these pits were ordinarily left open, and then consider at what widely distant intervals in a modern household such an event as the death of a dog takes place. The remains of the dog are found, though very sparingly, in the earliest human habitations, ancient, like modern, savages having domesticated it before they domesticated the pig; and we have Professor Boyd Dawkins' authority (see "Journal of Institute," *l. c.* p. 390) for saying that the dog, as well as the goat and the *Bos longifrons*, were found by Mr. Tyndall in his pit, already dealt with. The fauna of the "large pit" may, perhaps, therefore be considered to belong to a somewhat later date than that of Mr. Tyndall's pit, as it comprises the domestic pig, which was not reported to have been found amongst that collection, and is entirely without any bones of the wild boar, and probably also without any of *Bos primigenius*, which was so abundantly represented there. From the fauna of the "skeleton pit" (see page 376, *l. c.*, Journal), to be hereinafter described, that of the "large pit" does not differ in any particulars which would justify us in thinking that the two pits belonged to different epochs; and here again the evidence from the animal remains coincides with that from other lines of investigation.

List of bones from "Large Pit."

Bos longifrons.—Part of left upper jaw with the two last molars *in situ*, labelled "From large pit." Part of palate, labelled "From 23 ft. below, beneath upper margin." One lower jaw and nine upper jaw molars. End of radius 3 ft. below the surface. Glenoid of scapula, 6 ft. End of radius 20 ft. beneath upper margin. Fragment of scapula 35 ft. below upper margin. Part of right upper jaw of a calf with one tooth of large size in alveolus not through gum, and a second small tooth still in substance of jaw.

Bos primigenius.—A single nasal bone.

Sus scrofa v. domesticus.—Os calcis "from red seam." Left ulna labelled "large pit." Right ulna, similarly labelled, and probably from same individual. Femur of young individual. Fragment of lower jaw of an older individual.

Cervus capreolus.—Horn with part of frontal, 33 ft. beneath upper margin; seventh cervical vertebra.

Cervus elaphus.—Part of radius of young specimen.

Capra hircus.—A considerable part of the skull with both horns, labelled "Red seam," 9 ft. 6 in. below the surface.

These bones afford proof of the presence in this pit of two individuals of *Bos longifrons* and *Sus scrofa v. dom.*, one only of *Cervus capreolus*, *Capra hircus*, and *Cervus elaphus*, though the *horns* speak to the presence of many more.

A number of molar teeth of the horse, *Equus caballus*, have also come into my hands, labelled "Large pit, superficial," and the addition of this last word is significant when we add that it is applicable to all the remains of the horse found at Cissbury, and that considering the large size and durability of the bones of this animal we have some justification for holding that if the first excavators of the shafts and galleries had domesticated it we should have come upon some osteological evidence of their success. As none such is forthcoming, we have a fresh point of agreement between the fauna of Cissbury and that of other excavations of the stone period.

The bones of a young badger, *Meles taxus*, as also of a young fox, *Canis vulpes*, have been put into my hands from the Cissbury excavations; their exact locality is not specified; and it is possible that they may be of comparatively modern date. It should be noted that neither the red-deer nor the roe antlers are always merely *shed* horns, portions of the frontal bone being in some cases left in connexion with them.

I come now to the fauna of the "skeleton shaft," the shaft in which a human skeleton was found, as described by Colonel Lane Fox, p. 375, *l. c.* The animal remains found in this shaft not only bear directly upon the mode of life and degree of culture which the excavators of this shaft and its fellows enjoyed, but they also very irrefragably prove that these shafts had been filled up before the second race of stone-using men dug their ditch and threw up their ramparts. It will be convenient, firstly, to give an account of the vertebrate animal remains, as has been already done with those found in Mr. Tyndall's and in the "large pit;" secondly, to show how the shells of the mollusca, found in great abundance in the shaft, bear, as the shells of mollusca so ordinarily do, upon the age of the various strata in which they are found; and, thirdly, to describe the human skeleton found with those remains, attempting whilst doing this to frame some reasonable hypothesis as to the way in which this representative of the horde of Cissbury flint-miners came by her death and burial.

III. *Mammalian remains from Skeleton Pit.*

The skeleton shaft was a smaller but not a shallower pit than

most of those examined by us at Cissbury; its diameter was 4 ft. 6 in., whilst its depth from the surface, before the ditch was made, was 14 ft. In this pit were found more than 1,000 separate bones and fragments of bones of artiodactyle mammals, mixed up with an almost entirely complete human skeleton, but contrasting with it, firstly, in being usually fragmentary themselves, and, secondly, in making up by no means the full tale of the bones of the skeletons which they represented. The immense majority, about 600 out of 1,000, of the lower animal bones in this pit was made up by small fragments of the bones of the domestic pig, *Sus scrofa v. domesticus;* and all the larger and longer bones were imperfect from old breakages. The pig-bones give evidence of the presence in this pit of at least six individuals, two of which had been very young, and none of which had attained the age of eighteen months, as in none of them had the last true molar come into use. It has only been by the fragments of the lower jaws that I have been able to establish the existence of bones from as many as six pigs in this shaft; no one set of bones of any other denomination give evidence of more than four individuals of this species having been present. The very large number of pig-bones, and the small size of some of the fragments of the lower jaws, may serve as something of an excuse for my having given four (see p. 376, "Journal of Institute," Jan., 1876, vol. i., No. 3) as the number of individual pigs represented in this collection from the "skeleton shaft." It is of some consequence, as regards the view we have to form as to the way in which the bones of the lower animals came to be mixed up with those of the human skeleton, to have a precise enumeration of the number of those animals, and as nearly an exact enumeration of the number of bones by which each one was represented as may be possible. If all or a large part of the bones of all the skeletons had been found in the pit with the human skeleton, it might have seemed probable that the animals in question had been sacrificed, as in the familiar instance of the funeral of Patroclus, in honour of, and at the time of the interment of, the human body. But as it was found that the bones, whilst giving evidence of the presence in the pit of six or seven animals, fell far short of containing the proper complement of bones for an equivalent number of skeletons, some skeletons being represented by very few bones, it was plain that the human and the brute skeletons had come together into one and the same receptacle after experiencing, previously to their common interment, entirely different modes of handling. There is no reason to suspect the Cissbury flint-miners of cannibalism, but the animals we may reasonably suppose to have been eaten,

most of the marrow-containing bones having been splintered, and the immense majority of the other bones presenting old breakages.

The fact, which the subjoined table of the bones of the domestic pig will show, that no less than four more or less perfect sets of vertebræ have been recovered from this pit may seem at first hardly in keeping with the view just stated. But the Homeric epithet for the chine, as eaten at feasts (Iliad, vii. 321), curiously enough suggests that the vertebræ would be kept together even when thus used; and the comment of the scholiast upon the word in question seems to indicate that the way of utilising the muscles of the back for food with which he was familiar, was not such as to be described by such words as *νώτοισι διηνεκέεσσι*. It is easy to imagine that savages with flint knives only to carve with would be glad to be spared the trouble of disarticulating the vertebral column into segments, such as we eat under the name of "chine;" and the deeper lying spinal and interspinal muscles and ligaments would keep it all bound together after they had devoured the more superficially placed soft parts. What they left would be flung on to their rubbish heap; from that it migrated, in a way to be hereafter suggested, into the skeleton shaft.

The fact that the lower jaws are invariably broken,* so as to part the alveolar from the other parts of the bone, bears directly upon the employment of the bone for food, as does also the very scanty representation of the brain-containing part of the skull, or indeed of any part of the skull except the upper jaw. The absence of any manubrium sterni, I should explain, following a hint given by Rütimeyer, by suggesting that it was found useful as a punch when the tynes of the red deer might have become scarce.

An old goat, *Capra hircus*, was represented in the series from this skeleton pit by a radius, a metacarpal, and metatarsal bone, and by four lumbar vertebræ. A kid was also represented by its metatarsal bones.

Two roes, *Cervus capreolus*, were also represented here; the femur and humerus of one had been split for marrow, and was slightly stained with the manganic oxide.

Bos primigenius may perhaps be represented by a couple of thick and rough nasal bones, as well as by a few other fragmentary bones of similar texture, and some much worn premolars. These may have got accidentally mixed up with the bones of the other animals found in larger quantities in this pit, some of the successful drivers of the *urus* having brought away its head

* See Rütimeyer, "Fauna der Pfahlbauten," p. 14.

from the fatal pitfall. They were found immediately below the ditch bottom.

No bone of red deer, *Cervus elaphus*, has come from this pit to my knowledge; a single tyne may have come from it, but its presence in this series I incline to refer to accidental mixing in more recent times than those just alluded to.

An undetermined fragment of bone, which may have formed part of a bone implement, is also referred to this "Skeleton Pit."

I have had entrusted to me, or found myself in this pit, bones of the shrew mouse, of the field mouse, of the toad, and a few teeth of a cub fox. I am not able to attach any importance to them. The important vertebrate animals in this series are, by their presence, the pig, the goat, and the roe, and by their absence, the red deer and the domestic ox, though possibly some of the few and fragmentary bones spoken of above under the heading *Bos primigenius* may be referrible to that variety of the species.

In the Skeleton Pit—Skeletons of Sus scrofa v. domesticus are

Represented by—

- 4 right, 4 left } Scapulæ
- 3 right, 3 left } Humeri
- 3 right, 3 left } Ulnæ
- 3 Radii
- 4 right, 2 left } Femora
- 2 right, 2 left } Ischia
- 3 right Pubic bones
- 3 right, 1 left } Ilia

Fragments of 6 lower jaws, the youngest with complete milk dentition, the oldest with third molar not quite in use.

Four sets of cervical vertebræ—

Of which set No. 1 is complete, and will fit with a set of 8 dorsal, 5 lumbar, and 2 sacral.

Set No. 2 is also complete, and will fit with a set of 12 dorsal and 4 lumbar.

Section No. 3 consists of 3 cervical vertebræ, which will fit with a set of 14 dorsal and 4 lumbar vertebræ.

Set No. 4 consists of 6 cervical vertebræ, which will fit with a set of 10 dorsal vertebræ and 3 lumbar, with which a right pubic bone and the jaws of a pig, certainly under five months, may be connected as parts of one skeleton.

A fifth set of vertebræ, containing no cervicals, but 6 dorsals and 1 lumbar.

In addition to the vertebræ here specified, there are 2 sacral, 1 caudal, 1 dorsal, and 3 lumbar, which cannot very easily be referred to any one of the five sets, but which, from one reason or another, do not speak very positively to the presence in the series of any part of a sixth skeleton. This fact, however, is proved beyond question by the lower jaws and the fragments of lower jaws contained in the collection.

In addition to the bones already enumerated of the domestic pig, there were very large numbers of ribs, nearly all broken, and a considerable number of phalangeal bones.

IV.—*The mollusca found in the Skeleton Pit and their bearing on its date.*

The mollusca found in the Skeleton Pit, though they do not throw any light upon the habits, furnish an almost perfect

demonstration of the relative antiquities of the pit-diggers, of the woman whose remains were found in the pit, and of the diggers of the ditch who came last of all, little suspecting what "mouldered there below."

The following species of mollusca were found in the pit, adhering to its walls, or amongst the rubble:—*Helix nemoralis*, *Helix arbustorum*, *Helix lapicida*, *Helix rotundata*, *Zonites cellarius*, *Cyclostoma elegans*. They were found in great abundance, but there is no reason to suppose that they had been used for food. There were no specimens of the large edible snail, *Helix pomatia*, found in Cissbury at all, and though the next largest English snail, *Helix aspersa*, was found in other parts of the works excavated, I have no note of it from the Skeleton Pit. Oysters which (see Colonel Lane Fox, *l. c.* 367) were found in one instance at the bottom of the ditch, were not found in any stratum deeper down, and may, therefore, like the horse, be considered as marking a later age. To understand the value of the argument for the antiquity of the shaft and the priority in point of time of the entombment of the woman, whose remains are hereinafter described, to the digging of the ditch, Colonel Lane Fox's section (fig. 3, Pl. xv., *l. c.*) of the skeleton shaft, with the ditch escarp and counterscarp, should be before the reader and be compared with his description, given at p. 376 *l. c.*, of the structural arrangements there figured. In the skeleton shaft (H., fig. 3, Pl. xv.) the larger snail-shells, by themselves, are sufficient to show, firstly, that the ditch must have been cut through rubble continuous with that which we cleared out of the pit, to the great surprise, no doubt, as also to the great satisfaction of the excavators, who would find the work of cutting through rubble much easier than that of cutting through the natural chalk; and by consequence, secondly, that the shaft was anterior, not posterior, in date to the making of the fort. For it is simply impossible that such large shells as those specified could have worked their way in any abundance through the red seam of silting, made up of fine rain-washed particles, which marked the line of the bottom, and was conformable with the sides of the ditch. The sudden and somewhat unexpected breaking through of this brittle flooring of red silt and the opening into the shaft beneath, out of which a large part of the skeleton had been extracted previously to my coming, by Colonel Lane Fox and Mr. Park Harrison, was a circumstance which, not only by virtue of its general sensational character, but also by forcing upon me the fact of the finely particulate, and therefore the rain washed character of the red seam, made a great impression upon me. The red seam appeared, as it were, to assert its claim to belong to the lower strata by the abrupt manner in which it

broke away, much as one geological strata parts in an escarpment from one above it. As many of the snails below the seam were in large quantity, as well as individually of large size, it was a matter of ocular demonstration that they had in one way or another got down into the pit before the formation of the red seam, of the ditch, and of the ramparts. The length of the galleries connecting shaft E with shaft H (see fig. 1, Pl. xv.) rendered it impossible to think that the snails could have found their way into shaft H, as Colonel Lane Fox had done, by way of those galleries, and there seemed then, as there seems now, to be no escape from the conclusion that the ditch was a later, the shaft an earlier, excavation. The mollusca, however, furnished us with a stronger argument still. *For the shells of the cyclostomata had, in a very great number of cases, their opercula still in relation with them.* This shows beyond all possibility of doubt that the animals had crawled down alive, and had not simply worked down as dead shells, a view which was further rendered untenable by the fact that in a great number of instances the shells, both of the *Cyclostomata* and the *Helias* were adherent to the sides of the shaft. But they would not have crawled down in rubble to the depths at which we found them for any purposes of hibernation, nor could they, I think, have worked their way through the red seam so often referred to. On the other hand, the protection against both cold and drought which an open shaft only 4 ft. 6 in. in diameter and more than three times those dimensions in depth, would offer to snails on a chalk down, very fully explains both their presence and their abundance. This latter point, viz. the great number of these snail-shells, and especially of the *Cyclostomata*, found in the rubble-filled shaft *below*, though not *above*, the red seam, calls for some consideration. It might seem, at first sight, to indicate that the gallery and shaft excavators had left this pit open for a considerable time, departing herein from their usual custom. Snails, however, multiply with very great rapidity under favourable conditions, and the damp and protection from enemies, such as, notably, the pig, which such a shaft would have afforded, would constitute such favourable conditions. And it must be borne in mind that but little weathering of the sides of the shafts had taken place (see Professor Prestwich, "Journal of Institute," *l. c.*, p. 386), and that the rubble with which this shaft, like the others, was filled up, was not altered, softened, or broken up, as it would have been if long exposed to rain and cold. Taking all the facts together, those, to wit, which are put before us in Colonel Lane Fox's Plate xv., with letterpress in explanation at p. 375 *l. c.*; those which I have before me in the very large collection of

fragmentary and of perfect, of brute and of human bones, and those which the snail-shells represent, we may sum them up as follows:—A human skeleton, with nearly every bone represented, including the often missing patellæ and fibulæ, was found with its skull about 2 ft. 6 in. from the bottom of a shaft, which must have been 14 ft. deep originally, but which had got filled up some little way at the time of the falling of the owner of this skull into it. The skull rested on its base and lower jaw; one of the heel bones I found when I cleared out the upper part of the shaft from the "red seam" marking the bottom of the ditch downwards, 1 ft. 7 in. higher up than the skull. This *os calcis* was lying upon a small outstanding ledge of the natural chalk which had been left projecting inwards from the sides of the shaft, on which it had caught, in what we must suppose to have been the sudden and somewhat ungraceful plunge of the woman into the pit. This fall must have bent the head round, as the crown was looking upwards when it was found. The space occupied by the skeleton from the *os calcis* to the crown of the skull was only 1 ft. 7 in., a distance only some 3 inches or so greater than the length of the femur; but that even this distance should have been preserved, it must have been necessary that a considerable quantity of supporting material must have accompanied the woman in her fall, otherwise the entire skeleton would have been found flat on the floor of the shaft. And, as a matter of fact, we found the bones of the pigs above enumerated mixed up confusedly with the human bones and the rubble, in such a manner, that is to say, as to show that they had all come down together, that the human body must, in the singularly illustrative words of the Hebrew prophet, have * "gone down to the stones of the pit," with "the carcases trodden under foot" of the lower animals above specified. I am not clear that any evidence is now procurable for deciding whether the woman "went down alive into the pit" or not; there can be no doubt that her whole body, dead or alive, soft parts as well as bony, went down in their natural continuity. And it seems to me that the peculiarities of the collection of lower animal bones appear to necessitate the hypothesis of a rubbish heap having been accumulated close to the open mouth of this shaft, which rubbish heap must somehow or other have been precipitated simultaneously with a large quantity of rubble (from, possibly, shaft K, see Pl. xv.) and the human body into the "skeleton shaft." It is of course easy to suppose that this was done by violence, and was an act of foul play. But it is also possible that a rash step on a mass of rubbish and rubble in frosty weather may have

* Isaiah xiv. 19.

caused an avalanche-like descent of the entire mass of half-eaten bones, of rubble, and of the living woman.

It may be objected, perhaps, that even a set of savages would scarcely have their dwelling-place and their rubbish so near so dangerous a thing as an open pit. To this it may be answered, firstly, that an examination of the pit showed that it had actually been allowed to stand open for some time at all events, a red seam of silting having had time to form itself at a lower level in the shaft than that at which the woman's skull was found, to say nothing of the snails, and of the weathering of the walls to which they were attached; and, secondly, that modern experience shows only too abundantly that very dangerous and life destroying nuisances are often allowed to exist very near human dwelling-places. I have, indeed, sometimes thought that the proximity of the pit may have been thought desirable by the formers of the rubbish heap, as it may have been used as a sort of protective pitfall, affording something of security against marauders. If the woman, whose skeleton I shall now proceed to describe, can be supposed to have fallen into the pit whilst prowling round the hut which the rubbish heap implies, we can understand how it was that she was left to lie as she fell and where she fell, a circumstance which needs explanation.

The skeleton found, as above described, in the skeleton shaft under the ditch of the British fort at Cissbury, was that of a woman of about 25 years of age, of low stature, 4 ft. 9 in., with narrow shoulders and hips, but with a large head of the low-lying or "tapeinocephalic" type, not rarely to be found, as remarked ("Journal Ethn. Soc.," Jan., 1871, p. 467) by Professor Busk, amongst "priscan," as also amongst modern Tasmanian and Bushman skulls. As regards the limbs and the limb girdles, it may be remarked that their characters are such as very completely to remove any suspicion as to the assignment of the skeleton to the female sex which the large cubic capacity of the skull might excite. The measurements given below will speak for themselves, but it may be well to state that, though each bone, as a whole, gives an expression of lightness and slightness, and consequently of feebleness in its owner, there are some muscular ridges developed with remarkable distinctness. The right clavicle is much shorter and less curved than the left, but its muscular markings for the pectoralis major, as also the markings on the humerus for the insertion of that muscle and for that of the latissimus dorsi, when compared with the corresponding points on the left side, show that this woman was not left-handed. The two muscles named may have taken on their increased development from exercise in

climbing up and down the shafts of the flint-mines. The development on each femur of a third trochanter to receive the uppermost insertions of the gluteus maximus admits, I think, of being explained by a reference to the same practice, though the femora of the most eminently arboreal of the lower animals do not bear out this suggestion as regards the lower in the same way that they do as regards the upper limbs. The *linea aspera* is replaced by a depression from below the level of this third trochanter down nearly to that of the *foramen nutritium* of the femur, and for the distance corresponding with this depression the femur is much flattened and flanged out. The lower part of the *linea aspera* is much larger on the right side than the left, as though this woman had used the right lower limb by preference, as well as the right upper one. The tibiæ are anteriorly platycnemic. Traces only of the lines of junction between the epiphysis of the clavicle and its shaft, between the two epiphyses of the radius and its shaft, between those of the fibula and its shaft, and between the *cristæ ilii* and the body of the bone, are visible. The vertebræ are completed, and, what is somewhat surprising, the five bones of the sternum are all but completely anchylosed. There can, however, be no doubt as to the age of the woman to whom this skeleton belonged, inasmuch as the first vertebra of the sacrum is still unanchylosed, and the wisdom-teeth, though present in both jaws, are very little, whilst the other teeth are very much, worn. As regards the limbs, the scapulæ, the pelvis, and the clavicles of this skeleton, what Dr. Kuhff has said ("Révue d'Anthropologie," iv. 3, 1875, p. 435), viz. that "plus s'on se rapproche des origines de l'homme, et plus l'on voit s'effacer les caractères differentiels sexuels dans le squelette," is the very reverse of the actual state of the case. As regards the cranial capacity it is otherwise, and the skull of this woman from the skeleton shaft at Cissbury, with a cubic capacity of 105 inches (= 1732·7 cub. cent. = 61·5 oz. av. brain weight), exceeds the immense majority of male skulls cubed and recorded. Out of a large series from very various times and peoples cubed by myself, three only have exceeded this amount. One of these was a Roman of the Romano-British period in Britain, with a cubic capacity of 108 in.; a second was a skull from a British tumulus at Crawley, of probably the time between the evacuation of Britain by the Romans and its entire subjugation by the Saxons, with a capacity of 106·75 cubic inches; the third is a modern European head, with nothing to note in its history, but with a capacity of 105·5 cubic inches.

I have so very lately, in the pages of this Journal, vol. iv. p. 120, Oct., 1875, and elsewhere ("Address on Anthropology,"

British Association, Bristol, 1875), gone over the various rationales which have been offered to account for these, at first sight, somewhat startling results, that it may be superfluous to repeat here what I have already said *locis citatis*.

Looked at in the *norma lateralis*, as given in fig. 1, Pl. xix. vol. v. of the "Journal of the Institute," the skull is seen to have the highest point of its vertical arc just at the coronal suture; the slope of the forehead is a little more pronounced than is usual in female skulls, but, on the other hand, the parieto-occipital region has the vertical dip which, as Ecker has well pointed out, is so characteristic of such crania. As in typical dolichocephalic skulls, the glabello-inial is shorter than the glabello-postremal line, and the lambdoid suture comes largely into view. As in many "priscan" skulls, the coronoid process of the lower jaw fails to pass above the level of the lower edge of the zygoma. The anterior margin of the squamous nearly (but not quite, as drawn in the figure referred to) reaches the frontal bone. The alveolar border of the upper jaw describes a curve strongly convex downwards, and broken into, in the horizontal plane, by the great prominence of the sockets for the canines.

The skull when placed without the lower jaw on a horizontal surface is supported by the first and second upper molars and by the conceptaculum cerebelli. When looked at in the norma frontalis this skull strikes the observer, firstly, as being eminently well filled or rounded out in the supra-temporal regions, but, secondly, as having the impression of culture which is given by this development, neutralised by the peculiar conformation of the upper and lower jaws. The large size of the sockets of the canines in both jaws gives a squareness to that region of the face, whilst in the lower jaw the triangular raised area of the mentum is feebly developed, as compared with the alveolar part of the jaw.

The lower jaw, when placed on a horizontal plane, touches it with its inferior border on the left side only by a segment corresponding with the two anterior true molars. A wide interval separates the symphysis from such a plane, and though the angle of the jaw on the right side does aid in supporting it when thus placed, that on the left does not. Both angles are rounded off. The foramen mentale on the left opens a little further back, viz. immediately beneath the second præmolar, than is usual in European jaws. Just above it is seen the opening of an alveolar abscess in relation with the premolar, which appears to have been broken across midway between its crown and its neck during life, and to have had its pulp cavities consequently exposed. The apex of the coronoid projects only about one-tenth of an inch above the level of the condyle when

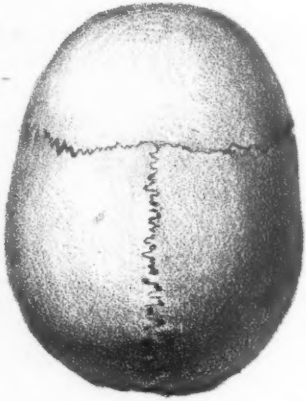


Fig. 2.

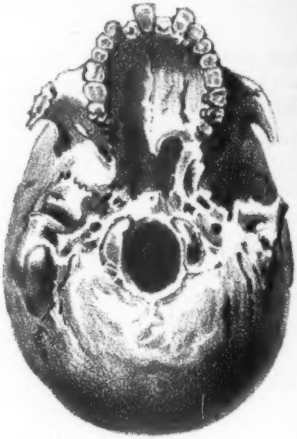


Fig. 3.

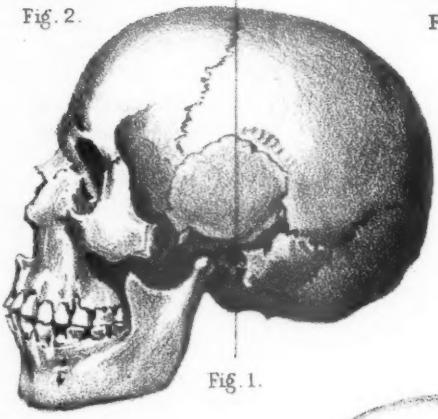


Fig. 1.

Fig. 4.

Fig. 5.

C. F. Kell. Lith. Castle St. Holborn. E.C.

SKULL OF FEMALE FOUND IN SKELETON SHAFT.

the jaw rests on a flat surface. Coupling these peculiarities with the shortness of the coronoid and the worn condition of the two anterior true molars, we may say that the lower jaw would, if taken alone, have furnished a strong ground for conjecturing that its owner had lived in early times. For though well-formed jaws are found in early cemeteries, it is certainly rare to find such a jaw as this in the burial places even of the bronze period. The thickness of the bone is referable to the irritation which the only recently completed evolution of the wisdom-teeth, as well as the injured premolar, would cause; when allowance is made for this, the sexual characters of this lower jaw are as distinct as those of any other part of the skeleton, and notably its inferiority in the points of width and of muscular markings.

The lower parts of both nasals are lost; the upper halves form a broad and low arch, above which a moderately developed glabella passes without any mesial depression into similarly developed supraciliary eminences on either side. The left supra-orbital notch had, even at the early age at which this woman died, been converted into a foramen. Viewed from behind, the lateral walls of the occipital pentagon are seen to converge somewhat from the point of maximum width, which lies a little below the level of the faintly marked parietal tuberosities. In this aspect the skull is seen to narrow rapidly, as if pinched in, immediately behind this level of maximum width (see "Journal of Institute," vol. v. p. 124). The upper part of the occipital bone, however, though its sides are conformable with the posterior and inferior portions of the parietals, is not produced so far backwards as is sometimes the case in skulls of this type, and specially in male skulls, and, on account of this truncation, it does not come largely into view in the norma verticalis. In this aspect the sides of the cranium are seen, as we follow them forwards from the point of maximum width, to undulate gently inwards over a space corresponding with a shallow post-coronal depression, and then to taper very gradually to the region of the frontal tubera; as we follow them backwards they converge with much greater rapidity, but still without giving a sharply pointed occipital end to the vertical oval. It is aphænozygous. A circular depression, about half an inch in diameter, is seen on the right parietal bone, its floor is covered with vascular ramifications, but the injury to which its formation is due had been recovered from long before death. All the cranial sutures in the vault of the skull are free from anchylosis, except the frontal, which, as usual, is closed, though it may be stated here that it is occasionally patent even in undoubtedly priscan skulls. The occipito-sphenoid suture had

been entirely closed before death, but there are some traces of the intermaxillary still visible upon the palate. The palate is well formed, deep, and elliptical. The wisdom-teeth alone have escaped degradation through wear, and as the entire set of teeth is present in the lower jaw and is similarly worn, this fact shows that this woman lived upon a coarse or ill-prepared diet.

The measurements of the bones and other points upon which the preceding statements are based are as follows:—

Measurements of Cissbury Skeleton.

Skull.

	Cub. inches.		Cub. inches.
Cubic capacity	105	Depth of lower jaw at symphysis	1·4
Circumference	21·3	Width of ascending ramus	1·45
Extreme length	7·7	Interzygomatic width, approximatively	·46
Glabello-inial length	7·4	Cephalic index	·74
Extreme breadth	5·7	Antero-posterior index*	·53
Vertical height	5·85	Orbital index	·83
Absolute height	5·6	Nasal index	·45
Least frontal width	3·1	Distance from foramen occipit. to fronto-nasal suture	4
Greatest frontal width	5	Distance from foramen occipit. to nasal spine	3·75
Frontal arc	5·1	Distance from foramen occipit. to alveolar edge	4
Parietal arc	6		
Occipital arc	5	Basilar angle	23°
Height of orbit	1·3	Facial angles, taken with M. Broca's goniometer, to root of nasal spine	68°
Width of orbit	1·55	to alveolar edge	65°
Length of nose	2		
Width of nose	0·9		
Width of root of nose	0·85		
Length of face	3		
Interangular diameter of lower jaw	3·4		

Long Bones.

Femur	15·8	Transverse diameter between most distant parts of ilia	9·1
Tibia	12·5	Length of scapula from glenoid fossa to vertebral border along spine	3·9
Humerus	11·3	Length along lower margin	4·6
Radius	8·6		
Right clavicle	4·8		
Left clavicle	5·4		
Transverse diameter from pelvis	3·8		

Description of Plate XIX.

Fig. 1.—Skull of female found in skeleton shaft at Cissbury; *norma lateralis.*

Fig. 2.—*Norma verticalis.*

Fig. 3.—*Norma basalis.*

Fig. 4.—*Norma occipitalis.*

Fig. 5.—*Norma frontalis.*

For description in detail, see p. 33 *et seq.*

* See "Journal of Institute," Oct. 1875, vol. v. p. 149.

MARCH 14th, 1876.

Colonel LANE FOX, President, *in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following list of presents was read, and thanks were ordered to be returned to the respective donors.

FOR THE LIBRARY.

From the ASSOCIATION.—Journal of the East India Association. Vol. IX. No. 3.
From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV. No. 166.
From Prof. F. V. HAYDEN.—Bulletin of the U.S. Geological Survey of Territories. No. 6, 1876, 8vo; Ditto, Vol. II., 4to; 40 Photographs, ditto.
From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. XX. No. 2.
From the REGISTRAR-GENERAL.—Statistics of the Colony of New Zealand for 1874.
From the EDITOR.—Materiaux pour l'Histoire de l'Homme, Feb., 1876.
From the INSTITUTION.—Fifty-eighth Annual Report of the Royal Institution of Cornwall.
From the EDITOR.—Revue Scientifique. Nos. 35-37, 1876.
From the SOCIETY.—Sitzungsberichte der Physikalisch-Medicinischen Société. Zu Erlangen, 1874-5.
From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. IX. No. 6. Vol. X. No. 4.
From A. L. LEWIS, Esq.—Anthropologia. Vol. I. Nos. 1-5.
From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

From W. E. STANBRIDGE, Esq.—Flat stone for grinding Nardo seed on, from Australia; two hand stones for ditto; one spear-head from the Gulf of Carpentaria; seven hand stones for cutting.

Captain MELFORT CAMPBELL, President of Nevis, exhibited some stone implements from Honduras and Turks and Caicos Islands, on which the following remarks by Mr. FRANKS were read:—

1. A knife or dagger, 10½ in. long, made out of a thick flake of buff-coloured chert, of a fine amber hue; the flake has been nearly prismatic, and the lower end has been chipped away all round so as to form a handle. It was found near Belize, British

Honduras. The same type has been more than once discovered in the locality. There are two specimens in the Christy collection, but very inferior in size and somewhat differing in material. One of these, 7½ in. long, is of a black flint, and was found at Mahoc Kaye, river Belize; the other, 5¾ in. long, of a whitish buff chert or flint, was discovered in a mound on a branch of the river Belize. A weapon of the same kind is engraved in "Stevens' Flint Chips" (Lond., 1870), and is preserved in the Blackmore Museum. This is stated to have been found in British Honduras, with some still more singular implements, somewhat of a horse-shoe shape, one of which is in the Blackmore Museum, and a very perfect specimen in the collection of Colonel Lane Fox, engraved in "Proceedings of the Society of Antiquaries," 2nd series, vol. v. p. 94, and in the "Archæological Journal," vol. xxx. p. 34.

A very exquisite knife or dagger of semi-transparent flint has been deposited in the Christy collection by Mr. Charles Harrison, which was discovered near the mouth of the river Belize. It is very flat, symmetrical, and very neatly chipped. It resembles in general form a slightly barbed arrowhead, but it is 10½ in. long, the same length as the specimen under consideration.

2. A celt of the usual West Indian type, made of a mottled greenish stone, apparently jadeite; the lower end is highly polished. Length 3 in.

3. A celt of elongated form, made of a nearly black diorite, well polished. Length 4⅝ in.

4. A celt of brownish diorite, of a similar form to the last. Length 2¾ in.

The three celts were found at the Turks and Caicos Islands, West Indies.

5. A ball of argillaceous limestone, 2½ in. in diameter, with a corrugated surface, and a deeper depression in one place. Such balls are found in large numbers near the salt ponds, and their origin has not yet been ascertained. Mr. Etheridge, of the Museum of Practical Geology, has had one of them cut in two, and finds it to be of the same material throughout, and to exhibit no trace of organic remains. He seems disposed to refer their origin to the action of water. Dr. Hector has suggested that they may be partly due to these causes, and, still further, to large fucoids, with the roots of which they have become entangled, and thus thrown on to the seashore. The ancient inhabitants may have collected and utilised them for some purpose.

Mr. George Gibbs, a resident in Great Turks Island, has published in the *Turks Island Standard* newspaper, in a letter

dated 10th August, 1874, some observations on the antiquities of these islands, from which the following extracts may be of interest to the Institute:—

"From time to time, during the last twenty years to my own knowledge, and previous to which period, probably more frequently, have been picked up at these islands certain stone, or mineral substances, which have evidently been wrought to their present shapes by means of human hands. They were, doubtless, originally implements used by the Indian aborigines of these islands. Some of them are a flat eliptical wedge form, and vary in size from three inches to ten inches in length; these are known here commonly by the name of 'thunderbolts,' and are regarded as objects of superstition by certain people, who believe they came from the heavens during thunder storms, and that by having one of them in the house the danger of the building being struck by lightning is thereby averted. Others are in the shape of reptiles, &c.; these latter were probably idols. One I have seen, which, from its peculiar form and size, I think was intended to be used as a tomahawk or war-club. These all appear to be formed, although they vary in colour—some being black, others of a greenish tinge, and others of a grey ashy colour—of a similar substance. This material in a rough state, or in fact in any other form than that of these wrought implements, is not to be found here; the stones and rocks of our islands are all, without exception, of a limestone or of a coraline formation.

"History tells us that the Indians of the West Indies were, many of them, a migratory race, particularly the Caribs, who went about in their canoes during the mild season of the year for the purpose of acquiring plunder and slaves to carry back with them; going from island to island, probably from the continent to Trinidad, and following the group of islands to St. Thomas, Porto Rico, St. Domingo, on to Turks Islands, and the Bahamas. Our aborigines may have come from Yucatan; the distance from Yucatan to the west end of the island of Cuba being about the same as that from Florida to Andros Island, in the Bahamas. I do not think, however, that the inhabitants of these islands came from the north of us, more particularly from the fact, that in the various descriptions and engravings of aboriginal Indian implements that I have met with as being found in the northern continent, I have not seen any that correspond at all with those found in Yucatan. There is a similarity, especially in Stevens' 'Travels in Yucatan' (see engravings, vol. i. p. 413, and vol. ii. p. 342), in which I think I find a resemblance to those known here by the name of 'thunderbolts,' and also to certain round stones found very plentifully here,

These round stones which I now allude to are not of obsidian, but are apparently of the same material as the common limestone of these islands; they are of a spherical form, generally about two inches in diameter (none larger, although they are found smaller), and have this peculiarity, viz. that they have almost invariably a depression in each, about the size of the little finger in circumference and from one-half to three-quarters of an inch in depth, as if when just made and soft they were placed thereby on a stick to dry. These nodules, as you may call them, may have been thus made of clay by the Indians to be used in slings or thrown by the hand; or they may be petrified vegetable or animal matter; or possibly they may have been formed by crabs. The latter, however, I do not think probable, for if it were so, it is natural to suppose that they would be found occasionally in a soft state, in which condition they never, to my own knowledge, have been met with.

"We learn by historical authority that the natives of the Bahama Islands were all removed by the Spaniards to the island of St. Domingo to work in their mines, and so effectually were these islands depopulated that as far back as two hundred years ago there were none of the aborigines to be found in any of them.

"These old Indian relics, or you may say now curiosities, possess in reality no intrinsic worth, being only valuable as mementoes of an exterminated race of fellow-beings, and of whom these imperishable articles are the only traces left behind, excepting broken pieces of pottery, quantities of which are to be found both on the surface and on turning up the ground in certain localities in the adjacent Caicos Islands."

Mr. Stanbridge, of Daylesford, Victoria, exhibited and presented eleven stone implements from Australia. Another implement (No. 12) was also lent for exhibition, but is to be returned to Mr. Stanbridge at the end of three years for presentation to the museum at Daylesford, when a cast shall be returned. The following is the list of the above-mentioned implements:—

List *of* Stone Implements *presented and lent by* Mr. W. E. Stanbridge, M.A.I., of Daylesford, Victoria, Australia.

1. *Thouwin*, or native axe, found at Kooba, north bank Murrumbidger river, N.S. Wales, 1875.
2. Ditto.
3. Ditto.
4. Ditto.

5. Broken axe-head, found near a spring near Daylesford, Victoria, 1873.
6. *Cutting-stone* found near Daylesford, 1865.
7. *Spear-head* (stone) near Bourktown, in the Gulf of Carpentaria, 1873; shaft 10 ft. long, and thrown with throwing stick, "wummera."
8. *Khunda*, native hand-stone for cutting, found at Kooba, Murrumbidger river, Nov., 1875.
9. *Yowwi*, or flat stone, for grinding Nardoo seed on, from Teryawynga, Darling river, N.S. Wales, 1875.
10. *Wallong* found at Eurolii, Murrumbidger river, N.S. Wales, used for grinding Nardoo seed on the Yowwi, 1871.
11. Ditto, egg-shaped, found at Teryawynga, 1875.
12. Digging Stone found near Daylesford, 1873.

Discussion.

The President considered that the digging tool (No. 12) was actually an unfinished implement, which would in the finishing be materially reduced in size. It had, however, apparently been used already, one of its ends being much rubbed.

Thanks were ordered to be returned to Captain Campbell and Mr. Stanbridge for the exhibitions, and to the latter for his gifts to the Institute.

Mr. Howorth read the following paper:—

The Arian Nomades. *Part I.—The* Sauromatæ *or* Sarmatæ.

By your favour I have been permitted to read before the Society a series of papers on the westerly drifting of nomades from the 5th to the 19th century, in which I have attempted to correlate the facts accessible to me, and to somewhat disentangle the crooked web into which Eastern nationalities have been woven. I intended to follow this up with an account of the historical ethnology of the Slavs, for which I have accumulated considerable materials, but find that that question is complicated by a further one, namely, the race affinities and movements of the earlier nomades, and, further, that this latter question is in a deplorable condition of confusion, I have thought it more prudent to analyse it first. As I have said before, and am never weary of repeating, I claim nothing more for these researches than that they are, perhaps, based upon a wider induction of facts than others which have preceded them in the same field. Our science is like every other science, its premises are tentative only and provisional. All human hypothesis must be so. We can only compass a uni-

versal law when we shall have catalogued every fact. To suppose that we know any universal law, is to suppose that the secrets of the whole universe have been committed to us. They have not, and it is mere pretence which arrogates for any law in any science more than this, that it explains such facts as are at present accessible. I feel this very much when I read the criticisms of some philosophers on the scientific creed of a previous era. Because a man's hypothesis was wrong, and we have proved it to be so, I value it none the less. It enabled a great number of facts to be explained. Mine can do no more; the ultimate truth or falsity is a mere lottery. He would be a wise man indeed who could command belief when he spoke, and said that no future-discovered fact would or could disturb his conclusion. It is the labour—the hard, dry, repulsive labour—the patience and the care of previous inquiries, which makes our inquiry possible; and it is those qualities which ought to command our gratitude, while we dissent from the conclusions they have arrived at. It is but poor sport to laugh at the errors of those who have gone before, and to sneer at those who, through a smoked glass, could not see as clearly as we, whose glass is not so dim.

I prefer to stand uncovered before the shade of a man like Klaproth than to be flinging stones at him because he sometimes erred. This homiletic preface is meant to justify what often needs justification to the critics of our science, though I hope not to many here, namely, the tentative character of our results, which may be reversed, or at least qualified, by a very small discovery.

I will now proceed with my subject. The Sarmatæ form a good commencement, in the first place because their affinities have been more than usually fought about; and, secondly, because having once fixed them, we can, with considerable certainty, fix those of some of their neighbours.

Since the revival of learning, until recently, there have been, I believe, two theories about the Sarmatæ—one that they were Germans, the other, supported by an immense array of authorities, that they were Slavs, and the ancestors of the various Slavic nations of modern times. This latter view is, I believe, with one exception, almost universally prevalent still in England, and Mr. Latham, in his various works, in which he has championed the cause of the Slavs so bravely, seems to consider the matter so certain that he does not stop to prove it, but takes it for granted; yet I believe that no conclusion is more faulty.

Schafarik, the great historian of the Slavs long ago, proved to my mind conclusively, that whatever else the Sarmatæ were, they were not Slavs, and his conclusions have, I believe, been

recently generally accepted in Germany, and in England by Mr. Gent in the Arnold prize essay on the Scyths, written in 1870, and which is a very able performance. Schafarik accumulated the material which enables a decision to be arrived at, but he contented himself with a negative conclusion. Mr. Gent in this respect follows him, and I find him expressing himself in these terms: "So far, therefore, is the name of Sarmatian from being the ancient representative of the Slavic family, that we should prefer to say that the true Sarmatian blood is more *nearly extinct than can be asserted of any other race.* It was a race powerful only from its reckless savageness, and maintained so long chiefly by its promiscuous alliances" *(op. cit.* 34). I believe, on the contrary, that, far from being extinct, they have left a vigorous branch behind in the Caucasus, namely, the Ossetes, besides having improved a large portion of the more vigorous races of Europe with their blood; but this is another matter. In the present paper I shall content myself with proving that the Ossetes are descendants of the Sarmatæ, a conclusion in which I owe a good deal to the researches of Vivien St. Martin, the very able President of the French Geographical Society, whose various papers are models of ingenuity and profound research. On the present occasion I shall extract a good many facts from his memoir on the ancient geography of the Caucasus and his "Researches on the Primitive Inhabitants of the Caucasus."

He says that the name Osséte, which has become naturalised in Europe, is taken from Ossethi, the Georgian name for the country inhabited by the Ose, and is formed of the ethnic name Ose and Ethi, which means country or land. Osséte, therefore, is a corrupt form, and in speaking of the race we ought to speak of the Ose, Ousi, or Ossi, which is the Georgian form of the name, or As, which is the form it takes in the Russian narratives. The As call themselves Ir or Iron, and their country Ironistan, a fact to which I shall revert presently.

The arrival of Batu Khan with the Golden Horde on the Volga and Don made a notable revolution, and disturbed the distribution of tribes very considerably. We are told that, *inter alia*, they ravaged many flourishing towns belonging to the Ossetes, whose settlements then probably reached as far as the Terek. And we are again told that, at a later date, having embroiled themselves with the Khans of the Crimea, they were driven out of the plains and lower mountains chiefly by the aid of the Circassians (who were vassals of the Krim Tartars). They were driven out of the two Kabardas, where the Circassians established themselves in their place, and were obliged to become tributary to the latter, and remained so until the

Russian aggressions had weakened their authority. Those who lived south of the mountains became dependent on the Georgians (Klaproth, "Taubleau du Caucase," 66). This account is confirmed by Haxthausen, who says: "Those Ossetes with whom I conversed had very obscure traditions of the origin, migration, and history of their race. They said that their ancestors came originally over the mountains from the north; that they at first dwelt in the country now occupied by the Circassians, and had been driven onward as far as their present territory by other races pressing behind ("Transcaucasia," 394). One of these races, who, no doubt, pushed upon them, has itself been terribly scattered, namely, the Turkish race, whose various fragments are found in the mountains west of the Os. They are descended from the ancient Comans, and were also thrust out of a portion of the Kabarda by the Circassians, as I have elsewhere described.

In mapping out the ethnology of the Northern Caucasus as it was before the arrival of the Golden Horde, we must extend the Os settlements as far north as the Terek, upon whose marvellous network of head streams they dwelt, bounded on the west by the Circassians, on the east by those tribes classed by the Russians under the name of Mitzgeghi. Let us cross the Terek. On doing so we enter the vast plain known to the various Turkish nomades as Desht Kiptchak (the Teste Kiptchak of Reineggs, i. 34), the desert or Steppe of Kiptchak, *i.e.* of the Comans, for, as we know from the Byzantine authorities, Kiptchak was the indigenous name of the Turkish Comans.

The plain is, in fact, the Kumestan of the Persians and the Kumuk of the Arab writers, and doubtless received these names from the languid river that threads its centre and barely creeps to the Caspian—the Kuma. A large portion of its eastern part has probably only been reclaimed comparatively lately from the Caspian. I have already devoted a paper to the Comans, in which their affinities are pointed out, and shown to be purely Turkish. In which also it is shown that they were very recent immigrants into the country on this side the Volga; that they, in fact, only crossed the Volga at the end of the 10th century. They, therefore, were not the Kumuks of the early Arabs, who relate how a large part of the Caucasus was converted to the faith, and who have a good deal to say about the Kumuks, whom they conquered and converted, and we are told, having done so, named them Kazi Kumuks, or believing Kumuks, as distinguished from the mountaineer Lesghs, who refused the faith, and were known as the Kafir Kumuks (Reineggs, *op. cit.* 90). As I have shown in a previous paper,

these Kumuks, who were conquered by the Arabs, are now represented by the Kazi Kumuks and Kara Kaitaks of Daghestan. I have argued further that they were the same people; otherwise known as Khazas, and who held the plains bounding the Caspian on the west as far north as the Volga, the most potent race of these regions in the earlier middle ages. So that the combined effect of the invasion of the Turkish Kiptchaks and of the Golden Horde into Europe has been to drive the redoubtable race of the Khazars into the recesses of Daghestan; but it also drove other tribes further south. I believe it had a very considerable effect on the Alans, but this is not our present question, which is to deal with the As. Now it seems certain that the As were among the nations who lived about the Lower Don before the arrival of these invaders, not only from their own traditions, which make them to have lived on the Don in former days, but also from the early Russian chroniclers, who name them in their accounts of their victories on the Mæotis and Black Sea. Thus, after mentioning the overthrow of the Khazars by Sviatoslaf in 965, Nestor goes on to say that the latter also subjected the Yasses and the Kassogés. The latter were Circassians, whose country in the 10th century was called Kassakhia, while they are still called Kassakhes by the As (see Karamzin, French ed., i. 214). In the year 1029 Yaroslaf took many of the Yasses prisoners, and carried them off to Russia (Schafarik, "Slavische Alterthumer," i. 354). Again, in 1116, Karamzin speaks thus of them, quoting, apparently, Nestor. "Yaropolk, the third son of Monomachos (*i.e.* of Vladimir Monomachos), had at the same time brilliant successes in this war which he prosecuted on the Don. He captured from the Poloutzi (*i.e.* the Comans) the towns of Balin, Tchechluef and Sougrof, and made prisoners many *Yasses who dwelt there*, among whom was a beautiful girl, whom he married" (Karamzin, ii. 191.) Achmatof, in the atlas attached to Karamzin's history, places the Yasses on the Terek, possibly because they even then wandered so far. A portion of the Caucasus was called the Yassishan Mountain in the Russian chronicles of the 13th and 14th century (Schafarik, *op. cit.* i. 354, note). Lastly, we have the chief city of these parts, Azof, whose old name was Aza (V. St. Martin, "Recherches," 167), which, no doubt, received its name from them at a time when they dominated far to the north of their present seats.

We have thus traced the existence of the As in the neighbourhood of the Mæotis and the Don, as far back as the 10th century. From this point backwards we have a blank for several centuries in the history of these regions, but when we again come upon detailed accounts of it in the classical

geographers we have abundant proof that the As were there then.

Let us now examine these classical authorities. At the earliest dawn of Western history we find the country between the Don and the Volga, the plains of the Kuban and the Crimea, chiefly occupied by tribes whose names were formed or compounded in various ways out of the primitive race-name Madai or Medes. Thus there were the Mærotai, or rather Maitai, mentioned by Herodotus and other writers, and also in various inscriptions, who gave their name to the Mæotis or Sea of Azof. There were Sauromatai or Sarmatæ, Jaxamatæ, Kharimatæ, Thyssamatæ, Agamatæ, &c. That these tribes were all generically, and even more closely related seems beyond doubt, for several of the clans numbered among the Mæoti by Strabo are classed by Pliny among the Sarmatæ. Vivien St. Martin contends that a passage in the 11th Book of Strabo has been misread by translators, and that we there have mentioned the Mæotai-Asi, one word qualifying the other (*op. cit.* 160), while the Jaxamatæ are identified with both the latter in the following passage of the anonymous Periplus of the Euxine, "Post Sarmatas est genus Mæotarum qui Jaxomatæ appellantur ut testatur Demetrius . . . Juxta Ephorum vero vocatur Sauromatarum gens" (Schafarik, i. 340, note). Let us now say a few words on the etymology of these names. Here and elsewhere I am much indebted to Vivien St. Martin. Mæt, he says, is the national ethnic name of the Medic race. The Hebrews wrote it Madai, the cuneiform inscriptions Mad, the Armenians Mata; thus etymologically the Maitai of the Mæotis are identical with the Medes of Persia. We shall presently show that they were beyond doubt the same people.

Sarmatæ, or Sauromatæ as the Greeks wrote it ("Sarmatæ græcis Sauromatæ," Pliny, iv. 25), is compounded of the particle sar or sauro, and the name Mede Sar being in fact a qualifying particle. Some authors make this word identical with the Arian word saur, sar, or ser, meaning head or extremity, and make Sarmati to mean the furthest Medes. Schafarik says that in some Asiatic dialects sara means desert or steppe, and compares it with the indigenous name of the Kirghiz Kazaks, *i.e.* Sare Kaisaka (Vivien St. Martin, "Recherches sur les Populations Primitives, &c., du Caucase," 170 and 171). Gatterer derives their name from the Lithuanian, Szaure North, thus making Sauromata mean Northern Medes. There is still another etymology available, to which I lean; sar in the various Ugrian tongues means yellow or light red (*vide* the author's paper on the 'Origines of the Norsemen,' in the "Ethnological Journal"). Sarmatæ then would mean yellow or tawny

Medes. As I have said, Ephorus makes the Jaxamatæ a Sarmatic people, and this we have reported for us not only in the anonymous Periplus already cited, but also in the fragments of Scymnus, and in Stephanus of Byzantium (Schafarik, 340, note 2, and Vivien St. Martin, *op. cit.* 161, note 4). They are placed by the authors who name them in the very country of the Sauromatæ, and Mela attributes to their women the same customs assigned to those of the Sarmatæ, and I have no doubt that they were a branch of the race, an opinion held by Schafarik, Vivien St. Martin, and other authorities. Now Jaxamatæ is simply Jaz or Az Matai, *i.e.* Jaz or Az Medes, and Jaz or Az is a notable name in this region, from the time when Æschylus describes the tortures of Prometheus bound on the rock in the midst of the people who inhabited the sacred land of *Asia*, at the foot of the rocks of the Caucasus, and as far as the Mæotis ("Prom. Vinct.," v. 399 *et seq.*, quoted by Vivien St. Martin, *op. cit.* 158), until our own day, when, as I have shown, the As or Ossétes still frequent it; and it was from this sacred land of the Asi that the great continent of Asia eventually took its name.

The Jaxamatæ, then, I hold to have been a section of the Sauromatæ, differenced from the Maitai or Medes proper in some way. Let us now inquire into their traditional origin. Diodorus reports how the Scythians grew into a mighty nation north of the Caucasus, and made incursions into Asia Minor and Media. Out of the latter they took away a colony, which they placed near the river Tanais, which people were called Sauromatians, who, many years after increasing in number and power, wasting the greatest part of Scythia and rooting out all that they conquered, totally ruined the whole nation (Diodorus, ii. 111). This invasion of Media is fixed by Potocki and Klaproth in the year 633 B.C., when the Scyths made an invasion south of the Caucasus, under their king, Madues (Vivien St. Martin, *op. cit.* 151). I very much doubt the whole tradition, and it is chiefly valuable as showing that these northern Medes were held to be of the same race as the southern ones by Diodorus, or the author he abstracted, an opinion shared by Pliny, who has the passage, "Dein Tanain amnem, gemino ore influentem, colunt *Saramatæ, Medorum ut ferunt soboles*," &c. (Schafarik, i. 338). Herodotus, who lived much nearer the time than either of those authors, has a different tradition. He says:—"It is reported of the Sauromatæ that when the Greeks fought with the Amazons, whom the Scythians call oior pata, or man-slayers . . . . . after gaining the battle of the Thermodon the Greeks put to sea, taking with them on board three of their vessels all the Amazons

whom they had made prisoners; these women upon the voyage rose up against the crews and massacred them to a man. As, however, they were quite strange to ships, and did not know how to use either rudder, sails, or oars, they were carried, after the death of the men, where the winds and the waves listed; at last they reached the shores of the Palus Mæotis, and came to a place called Cremni, or 'the cliffs,' which is in the country of the free Scythians. Here they went ashore, and proceeded by land towards the inhabited regions. The first herd of horses which they fell in with they seized, and, mounted upon their backs, fell to plundering the Scythian territory. The Scyths could not tell what to make of the attack upon them—the dress, the language, the nation itself were alike unknown; whence the enemy had come even was a marvel. Imagining, however, that they were all men of the same age, they went out against them and fought a battle. Some of the bodies of the slain fell into their hands, whereby they discovered the truth. Hereupon they deliberated, and made a resolve to kill no more of them, but to send against them a detachment of the youngest men, as near as they could guess equal to the women in number, with orders to encamp in their neighbourhood, and do as they saw them do. When the Amazons advanced against them they were to retire and avoid a fight; when they halted, the young men were to approach and pitch their camp near the camp of the enemy. All this they did on account of their strong desire to obtain children from so notable a race. So the youths departed and obeyed the orders which had been given. The Amazons soon found out that they had not come to do them any harm, and so they on their part ceased to offer the Scythians any molestation. And now, day after day, the camps approached nearer to one another; both parties led the same life, neither having anything but their arms and horses, so that they were forced to support themselves by hunting and pillage.

"At last an incident brought two of them together—the man easily gained the good graces of the woman, who bade him by signs (for they did not understand each other's language) to bring a friend the next day to the spot where they had met. He did so, and the woman kept her word. When the rest of the youths heard what had taken place, they also sought and gained the favour of the other Amazons.

"The two camps were then joined in one, the Scythians living with the Amazons as their wives; and the men were unable to learn the tongue of the women, but the women soon caught up the tongue of the men. When they could thus understand one another, the Scyths addressed the Amazons in

these words: 'We have parents and properties, let us therefore give up this mode of life and return to our nation and live with them. You shall be our wives there no less than here, and we promise you to have no others.' But the Amazons said: 'We could not live with your women, our customs are quite different from theirs; to draw the bow, to hurl the javelin, to bestride the horse, these are our arts, of womanly employments we know nothing. Your women, on the contrary, do none of these things, but stay at home in their wagons, engaged in womanish tasks, and never go out to hunt, or to do anything. We should never agree together. But if you truly wish to keep us as your wives, and would conduct yourselves with strict justice towards us, go you home to your parents, bid them give you your inheritance, and then come back to us, and let us and you live together by ourselves.'

"The youths approved of this advice, and followed it. They went and got the portion of goods which fell to them, returned with it, and rejoined their wives, who then addressed them in these words following: 'We are ashamed and afraid to live in the country where we now are. Not only have we stolen you from your fathers, but we have done great damage to Scythia by our ravages. As you like us for wives, grant the request we make of you. Let us leave this country together and dwell beyond the Tanais.' Again the youths complied.

"Crossing the Tanais, they journeyed eastward a distance of three days' march from that stream; and again northward, a distance of three days' march from the Palus Mæotis. Here they came to the country where they now live, and took up their abode in it. The women of the Sauromatæ have continued from that day to the present to observe their ancient customs, frequently hunting on horseback with their husbands, sometimes even unaccompanied; in war, taking the field and wearing the very same dress as the men" (Herodotus, Rawlinson's trans., iii. 96-100).

This curious passage has given rise to a great deal of commentary. It is not easy to say what amount of foundation it may have; whether it is merely one of the fables which the credulous historian has handed down to us, or whether it be something more. I hope to discuss the question further some other time, when we have to criticise the ethnological affinity of the Scyths and Amazons.

I will now bring together a conspectus of ancient authorities on the Sarmatæ, arranged chronologically. The first author we shall mention is Hecatæus, who lived in the beginning of the sixth century, B.C., fifty years before Herodotus, and a fragment of whose "Periplus" is preserved by Stephen of Byzan-

tium. He tells us that the Ixibatai, corrected by V. St. Martin to Ixamatæ, lived on the borders of Pontus, close to Sindica, as the French geographer says; this is almost word for word what Strabo says of the Asi of the Bosphorus (V. St. Martin, *op. cit.* 163). Æschylus, who was nearly a contemporary of Hecatæus, also names Asii here, so that we find the Sarmatæ in the very earliest accounts we have, styled Asii, or *Jaxa* Matæ, as being probably the indigenous name. Herodotus is our next author; he places the Sauromatæ, as we have seen, above the Mæotis. He tells us that they spoke the language of Scythia, but had never talked it correctly, because the Amazons learnt it imperfectly at the first (the meaning of this I hope to clear up in a paper on the Scythians). Their marriage law laid it down that no girl should marry till she had killed a man in battle. (This is stated also by Nicholas of Damascus, Rawlinson's note, Her. iii. 100.) Sometimes it happened that a woman died unmarried at an advanced age, having never been able in her whole lifetime to fulfil the condition (Herodotus ed., cit. 1-3, 100). When Darius invaded Scythia the Sauromatæ sided with the Scyths (id. 101), and formed a section of their army (102). The Persians traversed the land of the Sauromatæ and entered that of the Budini beyond (id. 103). Not long after Herodotus, namely in 390 B.C., or according to Niehbuhr, in 360 B.C., Scylax mentions Syrmati, on the west of the Tanais, and Sauromatæ, on the east of it. The two are clearly merely forms of the same name.

Eudoxus (379 B.C.), as reported by Stephen of Byzantium, also names Syrmatai, west of the Don (Schafarik, i. 336; see also Niehbuhr, "Researches into the Hist. of the Scythians, &c.," 48, where the passage is amended). The next author who names them is Ephorus, who lived about 355 B.C. He is quoted by Strabo as saying "that there is a great difference of life both among the Sauromatæ and the other Scythians, for while some of them are exceedingly morose, and are indeed cannibals, others abstain even from the flesh of animals. Other historians, he observes, descant upon their ferocity, knowing that the terrible and the wonderful always excite attention, but they ought also to relate the better features of these people, and point to them as a pattern; for his part, he says, he will speak of those who excel in the justness of their actions," &c. (Strabo, vii. ch. 9). The work, entitled "De ære, aqua, locis," &c., which goes under the name of Hippocrates, and is a narrative probably contemporary with Scylax, or even earlier, mentions the Sauromatæ, the warlike character of their women, and that they lived on the Don among the Scythians (Schafarik, i. 336).

Polyænus, a writer of the second century, A.D., who drew

his materials from good sources, mentions that the Bosporanian king, Satyros, probably the second of the name (who reigned 349 to 311 B.C.), persuaded the neighbouring king of the Sindi to put away his wife, who was of the Ixomatai, and to marry his daughter. The injured princess had recourse to the arms of her people, and with their aid revenged herself upon them in several struggles (Schafarik, *op. cit.* 340). Niehbuhr tells us that during the wars of the sons of the Bosporanian king, Parisades, 311 B.C., the Sauromatæ still lived in their old homes on the Don, which did not yet border on those of the Getæ, being still separated by the Scythians ("Researches into the History of the Scyths," &c.).

The poetical "Periplus of the Euxine," which was written by Scymnus, of Chios, and whose date is not very certain, quotes Demetrius, of Kallatis (a Greek city of the Northern Pontus), as his authority for the Euxine, &c. His narrative is as follows:—

"Near the Scyths is the Palus Mæotis, which took its name from the Mæti. . . . The Tanais forms the boundary of Asia, and divides the continent into two parts. The first inhabitants of its banks are the Sarmatæ, whose land extends for a distance of 2,000 stadia. After the Sarmatæ come the Jaxamatæ, according to Demetrius a Mætic people, but according to Ephorus they were Sauromatæ. It was with these Sauromatæ that the Amazons united when expelled from the banks of the Thermodon. A portion of them have been named Sauromatæ Gynekokratoumenes (V. St. Martin, "Memoirs Historiques sur la Geographie Ancienne du Caucase," &c., 91). The power of the Sauromatæ constantly increased, and when one of the later Scythic kings made an incursion into the land of the Bosporani and the peninsula of Tauris, the Bosporani sought help from the Sauromatic queen, Amala, the wife of Medosacus. She fell with a large force of cavalry upon the camp of the Scythic king, put his son on the throne in his stead, and made him swear to respect the rights of his neighbours (Polyan., viii. c. 56, Schafarik, i. 337).

Sarmatia continued to be the name for the southern steppe land of Russia, with its borders, until a much later period. Sarmatæ occur near Olbia in the time of Dio, and about the Mæotis in the time of Lucian (Gent, *op. cit.* 33). We now find them spreading a long way—we find them in the plains of Pannonia in constant feud with the Romans. The history of these western Sarmatæ we shall continue on another occasion. It will suffice here to say that in Roman times they were divided into two main sections—the Roxolani and Jazyges. In the latter name we assuredly have the same old ethnic title to

which we have frequently referred, namely, Jas or As—another proof that the Sarmatæ and Ossetes were the same folk. By the great invasion of the Huns, which constitutes the Flood, or Chaos, in ethnographical inquiries, the Sarmatæ were finally scattered and separated. But as in the case of nearly all the nomades who inhabited the steppes, and who were driven westwards by fresh invaders from beyond the Volga, the Sarmatæ deposited a section of their body in the *cul de sac*, formed by the Caspian, the Mæotis and Euxine, and the Caucasus. There we meet with Sarmatic gates, while a portion of the Caucasus was called the Sarmatic mountain. But Sarmatæ, according to our own contention, is only an external appellative of a race otherwise known as As or Jas, and it is more to our purpose to know that so early as the days of Ptolemy there were three towns on the borders of the Mæotis whose names were compounded with the particle as; these were Azara, Azabetis, and Azaraba. He also names a tribe of Osilians in the neighbourhood of the modern Azof (V. St. Martin, *op. cit.* 166). While even earlier in the pages of Strabo we find mention of the Aspurgitanoi, *i.e.* the inhabitants of As burgh, or the city of the As, which is word for word the Azof of mediæval and modern writers. It is also word for word the Asgard of the Eddic traditions, the sacred city whence Odin and *Asirs* or Ases came, and these Asirs or Ases were surely the same folk as the Yasses of our own day, and the Sarmati of classical writers—a question which I hope to prosecute in a succeeding paper. This brings the story down to that *hiatus* or blank in our accounts of these regions to which I have previously referred, and which closed with the tenth century, from which date I have already traced the progress of the Yasses.

Having traced out the historic continuity of the Sarmatæ and Ossetes, or As, we will now draw attention to some corroborating facts that support our contention. The indigenous name of the Ossetes is well known to be Iron, and that of their country Ironistan; but Iran is the indigenous name of Persia and Media, it is so called in the coins of the Sassanid dynasty, whose kings style themselves on them, Malka Malkani Irân—king of kings of Iran; and on the inscriptions of the same dynasty at Nakshi Rustam and Kirmanshah, there are the words Malka Irân wa Anirân, King of Iran and Aniran (Klaproth, "Asia Polyglotta," 83). Again, in Herodotus we find the following passage:—"The Medes had exactly the same equipment as the Persians; and indeed the dress common to both is not so much Persian as Median. They had for commander Tigranes, of the race of the Achæmenids. These Medes were called anciently by all people Arians" (Her., Raw. trans., iv. 61).

In regard to their physique, customs, &c., the Ossetes are remarkedly different from the other tribes of the Caucasus, they are more like Europeans. Blue eyes and light and red hair are frequent among them, and there are few who have really black hair ("Tableau Historique du Caucase," by Klaproth, p. 70). But it is in their language that the Medic origin of the Ossetes is best shown. Klaproth compared a long vocabulary of Ossetic with Persian and other allied languages in the "Asia Polyglotta," and his researches were followed up by Sjogrën, who has made an elaborate examination of the language, and amply confirmed the conclusions of Klaproth that it is an Arian tongue, most nearly allied to that of the old Persians and Medes, and having in it besides a barbarous element, which is perhaps Scythic, for, as Diodorus tells us, the Sarmatæ were compounded of the Medes and Scyths, and Herodotus expressly tells us that the Sarmatæ spoke the language of Scythia, but not perfectly.

We have still other evidence. The chief rivers of Ossetia are the Arrdon, Ursdon, Dugor, Pog, Ksani, &c. In the two former we have the particle don, the root of Tanais, the ancient name of the Don *par excellence*, of Danaper or Dnieper, and Danastris or Dniester, which were the great rivers of Sarmatia. Now don or dun is Ossetic for river to this day, Pog is assuredly the same name as the Bug of South-western Russia, and we further find that such Sarmatic names and words as have come down to us have their affinities in Ossetic and its sister dialects of Persia and Media. Thus—I am chiefly quoting Schafarik—the Sarmatian names Arsaces, Ataces, Badaces, Vadapaces, Pharnaces, Spadaces, Dadaces, Medosaces, are the same in form as the Persian and Medic Arbaces, Arsaces, Basaces, and are compounded of aces, *i.e.* as, and various qualifying particles. Again the Sarmatic names Amnagos, Abragos, Japhagos, Mazagos, Dadagos, Zunagos, Muzunagos, Argunagos, Rechunagos, Tumbagos, Spotagos, Aluthagos compounded with ages or agos may be compared with the similar names Astyages, Harpagas, &c., found among the Medes and Persians. Again, the Sarmatic *Ario*pharnes, Sætapharnes, Usafer, Sinafer, are, equally with the Medic and Persian Dataphernes, Tissaphernes, compounded with pharnes or far, which is, in fact, the word for splendour, majesty, &c. In the first of the names quoted it will be noted that the qualifying particle is aris, *i.e.*, Arian, and this in a Sarmatic name. In Zend Aspehes, and in Persian asp, esp, is a horn, whence the Persian names Astaspes, Sataspes, Zariaspes, Hystaspes, whence also the Sarmatic name Banadaspus. Sarmatic Bages is the Persian Bagæos; Sarmatic Pharzeos the Persian Pharsiris (probably from fars, land, country). Sarmatic

Abragas is Persian Abradates, Abrocomas, &c., &c. (Schafarik, "Slavische Alterthumer," i. 366).

I shall not now refer to the words contained in Böck's "Corpus Inscriptionum," which may be better discussed when, in a future paper, I, with your permission, examine into the affinities of the Scyths. At present it will suffice to have brought together the foregoing facts, which go far, I think, to support the conclusions partially drawn by Schafarik, V. St. Martin, and others, that the Ossetes of the Caucasus are the descendants of the Sauromatæ or Sarmati of classical writers.

In the discussion which followed, Mr. Bouverie Pusey, Mr. Jeremiah, and Mr. Park Harrison took part, and Mr. Howorth replied.

A paper, entitled "The Pelagosa Finds," being a translation by Captain Richard Burton of two letters from H.B.M.'s Vice-Consul, Signor Toppich, of Lissa, was then read by Captain Dillon, in the absence of the author and translator.

The publication of it is postponed pending the arrival of certain illustrations promised.

After some remarks from the President, the meeting separated.

March 28th, 1876.

Colonel Lane Fox, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of Robert Swinton, Esq., was announced.

The following list of presents was announced, and thanks were voted to the respective donors:—

For the Library.

From the Society.—Jahrbuch der K. K. Geologischen Reichsanstalt. Vol. XXV. Nos. 7-17, 1875; Verhandlungen, Ditto. Nos. 12-18, 1875.

From the Society.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. V. No. 1.

From the Editor.—Revue Scientifique, 38 and 39, 1876.

From the Society.—Journal of the Asiatic Society of Bengal. Part I. No. 3—Part II. Nos. 2 and 3; Proceedings, Ditto. No. 9, Nov., 1875.

From the IMPERIAL ACADEMY OF SCIENCES, VIENNA.—Sitzungsberichte Philoshistor: Classe 78 Band, Heft 2 and 3; 79 B. H. 1, 2, and 3; 80 B. H. 1, 2, and 3; Math-naturw Classe, 1874; I., II., and III. Abtheil, Nos. 8-10, 1875; I. and II. Abtheil, Nos. 1-5; III. Abtheil, Nos. 1 and 2; Almanach, 1875.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV No. 167.

From the SOCIETY.—Proceedings of the American Philosophical Society. Vol. XIV. No. 95.

From the EDITOR.—Nature (to date).

A collection of Flint Implements and Arrow-heads from Ditchley, Oxfordshire, was exhibited by Captain DILLON.

The following paper was read by the author:

REMARKS *on* JAPANESE MYTHOLOGY. By EDWARD B. TYLOR.

A JAPANESE gentleman, resident in London, Mr. Tatui Baba, has, at my request, translated the opening part of the Ko-zi-ki, an important collection of Japanese annals, so far as I know, not accessible in any European language. The latter part of this work, which constitutes its main contents, is of a historical nature; but the introductory part consists of legends of the Creation and other episodes, in which divinities take part, and it is to these legendary episodes that the following brief remarks relate. I have drawn also from Siebold's "Nippon," and Klaproth's introduction to Titsingh's "Annales des Empereurs du Japon."

It is evident at the first glance over the collected materials of Japanese tradition that the following three principal elements have contributed to them:—

1. The introduction of Buddhism into Japan has caused the reception of a mass of well-known Buddhist legends, which may be here set aside without further notice, the object of the present paper being to bring into view only what is distinctively Japanese.

2. Though the indigenes of Japan were of a race different, physically and philologically, from the Chinese, these latter have migrated into Japan in large numbers within historical times; and in fact Japanese culture is largely of Chinese origin, or developed under Chinese influence. As might be expected, this Chinese influence is well-marked in Japanese mythology. Thus, the legend of the Creation starts with an original chaos, in which the female and male elements, the *me* and *o* (Chinese *yn* and *yang*), were not yet separated; but water, air, and earth were mingled, like the yolk and white of an egg mixed up, till

matter divided itself by the heavy parts sinking to form the earth, while the light parts rose and became the heaven. The Chinese origin of all this is evident: and, again, the Japanese first man, Pan-ko-si, is obviously the Chinese Pwan-ku. These Chinese elements in Japanese tradition may also be set aside.

3. After thus eliminating the two classes of borrowed legends there is left what appears to be a genuine Japanese stratum, containing nature-myths of a very clearly marked character. Thus, in the narrative of the Creation, while the earth is still soft like mud, or like oil floating on the surface of water, there arises out of the mass the flag or rush called *asi* (Erianthus japonicus), from which there springs the Land-forming god (Kuni-soko-tatsino-mikoto). After him arise the god and goddess whose functions are the baking of mud-earth and the baking of sand-earth. As the rush or flag in question grows thickly in marshy places round the Japanese coast, we have here stated in mythological language the geological process of the formation and solidifying of new ground. One of the next proceedings is the production of the islands by the god Iza-na-gi, and the goddess Iza-na-mi, who stand on the heaven-bridge and dip a spear in the muddy waters; the drops from the spear form an island (or several). This is followed by the story of the loves of this divine pair, the male and female spirit, who descend on this island and meet near the imperial column with mutual expressions of admiration. But the goddess, by speaking first, gives an evil presage, and the first child born to them is accordingly set adrift in an ark of reeds. This episode of the setting adrift of a divine or heroic infant, which is found in the traditions of so many races, is noticeable as occurring in Japan.

The Sun-goddess, Ama-terasu-oo-kami, the heaven-enlightening Great Spirit, Ten-shu-dai-sin, is the heroine of several episodes, whose purely nature-descriptive character is evident. She is sent up to heaven to govern all things, and with her is her sister, Tsuki-no-kami, the Moon-goddess. Their brother is a god named Susanno-ono-mikoto, whom, even if the Japanese commentators did not recognise him as the God of Winds, we should see to be such by his description; he is gentle and mild, always with tears in his eyes, but if opposed becomes furious, tearing down everything, uprooting the trees and setting fire to the forests. Therefore his parents order him down to Hades, but he is allowed to visit first his sisters the Sun and Moon in heaven. So he rushes up to the sky, to the terror of the Sun-goddess, Ten-shu-dai-sin. When she sows the earth in spring he scatters and tramples the paths, and at harvest-time he drives

the rain and hail into the fields to destroy the crops. His unruly and offensive conduct at last drives his sister to take refuge in a cavern in the sky; closing the opening with a great stone, she thus leaves the world in darkness. Distressed at this, the 800,000 gods devise means to bring her out; they light a great fire outside, and set a goddess to dance ridiculously, with other joyous proceedings, setting birds to sing, and hanging up jewels, peculiarly cut pieces of paper, and a sacred mirror. The Sun-goddess, wondering that music and dancing should still go on, although she has darkened the world, pushes the great stone a little on one side and peeps out; then the god stationed on guard pushes it on one side and pulls the Sun-goddess out, and they stretch a cord across to prevent her from getting in again. Thus she is appeased, and the Wind-god is sent down below. The scene of the Sun hiding herself is now in the legend transferred to earth, and the very cave is shown; but it is evident that we have really here, in a very clear and perfect form, the nature-myth of the Sun driven into hiding by the storm and peeping out from her cloud-cave, when presently the great cloud is rolled away like a rock from a cave's mouth. Following out the same course of ideas, we read of the Wind-god descending to earth and slaying the eight-headed and eight-tailed serpent, who is about to destroy the "lady of the young rice field." The monster is known to the Japanese as being an eight-mouthed river, so the story seems really that of the wind and the flood.

Beside the main themes of these nature-legends, there occur, here and there, special episodes, and mention of ideas and customs of considerable interest. For example, when the god Iza-na-gi goes down to Hades to visit his wife, Iza-na-mi, to induce her to return to him, she replies, "Alas! thou art too late, I have already eaten the food of this world." We have here the interesting conception (which also occurs with great definiteness in New Zealand) that none can return from Hades who has once eaten of the food of the departed spirits. Again, the mention of the Sun-goddess being enticed out of her cave by the mirror to see herself in, and the pieces of cut paper, belongs to a special characteristic of Japanese worship. We have here evidently the mirror and the cut papers (*go-hei*) with which the Shin-to or Kami temples of Japan are furnished. (Mr. Franks mentions to me the interesting fact that these *go-hei* are used by the Ainos in their festivals, a point which bears on the problem of the relation of the Ainos to the original Japanese.)

It is obvious from the samples I have given that Japanese mythology, when cleared of Buddhist and Chinese elements,

contains nature-legend of value, and also episodes which may help to throw light on other branches of mythology and religion. I have intentionally avoided any full going into the subject, which can only be done by collating the whole set of documents with the aid of native Japanese scholars.

Discussion.

Mr. Tatui Baba—Mr. Chairman and Gentlemen, I am sorry to say that I cannot speak the English language so as to express myself clearly and distinctly. However, being asked so kindly by you, sir, I hope I may be permitted to make a remark or two on the subject. I have to express my best thanks to Mr. E. B. Tylor for bringing this subject before this learned society in a very interesting and able manner. As to the trans'ation which I did, I must say it is a very imperfect one. I had great difficulty in translating that book, not only because I have an insufficient knowledge of the English language, but also because there are some commentators who differ very much as to the meaning of the words mentioned in "Roziki." Besides, the eight-necked serpent called Oroti, and killed by Susanō, is said to be a man who came from the place of that name and not a monster, for that heavenly bridge mentioned in the book is said to be a ship. But I translated it as literally as possible. Till recently there were castes in Japan. They were abolished three years ago; but while they existed the people of the higher caste eat the food cooked in their own fire, because they said they must not "mix fire," and if they did so they would belong to the lower caste. In Japan these castes had nothing to do with religion, and there was no such thing as excommunication. Only if any one did "mix fire" he was looked on as not respectable, and would be disliked but not excommunicated. There are many customs which may be traced in the same way.

Mr. Moncure Conway said—I have been exceedingly interested in the important statements made by Mr. Tylor, and by my friend Mr. Tatui Baba. It has seemed to me in studying Japanese religion that there are various indications of some early intercourse with the Aryan races. It is not only in the resemblance of the idea of the food of the under world preventing, if eaten, the return to life, to the story of Proserpine eating the fatal pomegranate seed that we see this. One of the Vedic descriptions of Brahma speaks of the sun and moon as his two eyes, and there is a very early Japanese myth which relates that the sun and moon were left when a deity bathed his eyes in the primal sea. But I attach still more importance to the fine hero and serpent myth of that country, told of the prince after whom Japan was named. The monster had eight heads instead of the hydra's seven, but in every other respect was a veritable hydra, or water snake. The kami or mirror is mysterious; it is said by Japanese scholars and rationalists to be the symbol of self-examination. Each worshipper on entering the temple immediately repairs to it as his confessional, and after-

wards at once passes for meditation and devotion to the curious pyramid-shaped figure, made of bits of paper. I believe these pieces of paper are diamond-shaped, and I should like very much to hear from Mr. Tylor or Mr. Baba more concerning their significance.

Mr. Lewis said that it was a common belief that anyone visiting the fairies would be unable to return to ordinary human life if he partook of any of the fairy food, which was generally horseflesh or offal, though presenting by enchantment a beautiful appearance. Many details of this kind had been collected by Sir Walter Scott and embodied in the notes to his novels and poems. In "Redgauntlet" he went even nearer to the Japanese notion, as he conducted one of his characters to the lower regions, where he was warned by a deceased friend to "to tak naething frae onybody here, neither meat, drink, or siller, except just the receipt that is your ain." Of course this was a modern tale, but Sir Walter was more likely to have got the notion from a North British than from a Japanese or New Zealand source. In reference to Mr. Charlesworth's remarks, he would say that they must not conclude that because an occurrence was mentioned in a mythical legend no occurrence of the kind could be historical. For instance, Mr. Tylor had found in Japanese mythology an instance of an infant being turned adrift in an ark of reeds; but not to mention Moses, one of the ancient Assyrian kings stated in an inscription that he himself had been so treated. He was not, however, sure that this statement had been accepted by Assyriologists.

Mr. Hyde Clarke said that any similarities between Japanese and other mythologies must be sought, not in a communication in later times to or from Japan, but to the participation in common of prehistoric myths in descent. In the Japanese language there were many words which could be found in Africa, attesting the share of the Japanese in the general inheritance. The origin of mythology was to be found in early language, where several words were appropriated to one idea and several ideas to one word. In time selections took place, and afterwards the original meaning or application of the words was forgotten and new interpretations were placed on them.

Mr. Bouverie Pusey, the President, and others took part in the discussion, and

Mr. Tylor, in reply, said that the episode of the hero being set adrift was by no means necessarily mythic, as the custom of so exposing children was known to many countries. At the same time, from its picturesque character, it is often incorporated in mythic legends. With regard to ideas as to mortals eating the food of the departed souls not being allowed to return, he admitted the similarity of the superstition mentioned as to fairies' food and as to the pomegranate seeds eaten by Proserpine, but considered the New Zealand myth to correspond most exactly to the Japanese

notion. As to the meaning of the mirror in Japanese temples, it was true that the Buddhists considered the sacred mirror to symbolise self-examination, &c., but in Japan there is no doubt that its original meaning was that of an image of the sun, much as a polished gold disc was set up in the ancient Sun temple of Cuzco in Peru.

The following paper was read by the author:

*On the term "*RELIGION*" as used in* ANTHROPOLOGY. By W. L. DISTANT.

IN the interest of anthropology, it will, sooner or later, become necessary to form a synonymic catalogue of anthropological facts; in other words, to discriminate among the many physical and psychical phenomena recorded by actual observers and others as appertaining to primitive and little known races and varieties of mankind. Not but what we must own that the desire for exactitude is in general clear and unmistakable in the descriptions received from different observers of the same people, however divergent as to particular points these statements may be found. It however becomes necessary, before recording a reputed peculiarity either in belief, manners, customs, or physical conformity, over and above such as is vouched for by data, commensurate with the usual requirements of scientific research, to estimate the method of inquiry made, and the qualifications possessed by the observer, to arrive at a successful result. Thus we require to know the opportunity and time available for observation, the method pursued, the tact, experience, and, more particularly, the bias in the mind of the inquiring observer. The reticence of most savages (to use an inappropriate word for want of a better one) to impart information as to their beliefs and customs, and the extreme difficulty of questioning them on the same, either in a manner not calculated to give offence, or sufficiently clear to elicit the truth, often so formidable as to overcome the efforts of a careful and painstaking inquirer; whilst by duplicity, or a misunderstanding of terms completely unreliable or illusory, information is frequently acquired. Thus we have heard of the same people as possessing a religion and as having none whatever, of being addicted to cannibalism and as never practising it, of being ferocious and bloodthirsty and as harmless and friendly, except under provocation. And as anthropology is a popular science, and these statements are quoted by essayists and writers on social and religious subjects, sometimes to prove one thing and sometimes another, the need becomes greater that a careful analysis should be made similar to that selection

which eventually ensues in zoology in discriminating what shall be considered as a distinct and well marked species. The controversy incidental to the propagation of new scientific theories and generalisations is in anthropology frequently obscured by the array of quotations from different travellers to prove different views on the same question, as is constantly seen in the arguments for the progress or degeneration of man; whilst research among the records of the less qualified travellers usually lands the inquirer in the quicksand of apparent contradiction or meagre information, from which it is as easy to prove one thing as another. Tradition seems the most unreliable, and it is somewhat difficult to know when we are dealing with that or with actual observation. Thus traders frequently give most uncomplimentary accounts of the races who will not trade with them; missionaries, again, of those who will not receive them; and these statements in time become looked upon as verified facts. Of course we must not forget that the habits, customs, and beliefs of a primitive race alter in a speedy and remarkable manner after contact with a more advanced people, as we may prove by comparing the narratives of the old voyagers with those of recent travellers when describing the same races; but, making the fullest allowance for these necessary discrepancies, there still remains a residuum of somewhat irreconcilable information.

As an instance of the discrepancies to which we have alluded, in two recent and popular works we find the following somewhat discordant statements. Dr. Schweinfurth, in discussing whether the belief in immortality is indigenous to Africa, says: "At any rate, those statements are incorrect which would endeavour to explain the dull resignation displayed by the victims of human sacrifices in Dahomy by a theory of their belief in immortality.* That this belief in immortality, however, exists, is distinctly told us by Mr. J. A. Skertchly, who spent some time at the Court of the King of Dahomy, and witnessed the annual customs or sacrifices. To use his own words, the Dahomans believe that after death a person exists in the other world in a rank similar to that occupied by the deceased before death. Consequently, it is necessary to supply the dead monarchs with slaves; besides which the continual sending of messengers to them by their successors in this world keeps the departed sovereigns in a happy state of mind as to whether their greatness is forgotten on earth, &c.; † which merely reiterates what Captain Burton had told us before. ‡ Livingstone

* "Heart of Africa," vol. i. pp. 304-5.
† "Dahomy as it is," pp. 180, 181.
‡ "Dahome," vol. ii. p. 25.

should certainly be our greatest authority upon this question, for in him the missionary was combined with the explorer, and he seemed to have considered the problem of the Africans' religious beliefs as worthy of investigation as the sources of the Nile. It is from him that we may expect information on these points which has not been gathered by the geographer or naturalist alone, and its import to a profoundly religious mind like his own must have appeared more deeply significant than as a mere query of ethnology. Yet we learn that even in the same district there are somewhat contradictory accounts as to an indigenous belief in immortality. Thus at Marenga's town, on the west shore of Lake Nyassa, the men said their fathers had never told them aught about the soul, but they thought that the whole man rotted and came to nothing.* A short distance from here, however, Livingstone has a different experience: "Six men slaves were singing, as if they did not feel the weight of their slave-sticks. I asked the cause of their mirth, and was told that they rejoiced at the idea of coming back after death and haunting and killing those who had sold them."†

There seems to be scarcely a doubt that there can be as many psychological states and beliefs of an undeveloped mind as there are different racial types of one stock, and this, no doubt, applies to Central Africa, and is shown in these two recorded instances of belief and non-belief in immortality, as given by Livingstone. Of the total disbelief in immortality, Sir Samuel Baker gives a good instance in his conversation with Commoro. He endeavoured to prove to that sturdy African the doctrine of another existence by the metaphor of St. Paul with a grain of corn. Commoro replied: "Exactly so; that I understand. But the original grain does not rise again, it rots like the dead man, and is ended; the fruit produced is not the same grain that we buried, but the production of that grain. So it is with man. I die, and decay, and am ended; but my children grow up, like the fruit of the grain. Some men have no children, and some grains perish without fruit; then all are ended."

This is neither hearsay nor report gathered by travellers, nor the mere judgment expressed on a hasty remark which may have been made by a negro follower. For the affirmative, however, we have the testimony of Mr. Winwood Reade, whose travels were principally confined to

* "Livingstone's Last Journals," vol. i. p. 114.
† Ibid., vol. i. p. 306.

the western portion of Africa, and who found that all the African tribes he met believed that the ghosts or souls of the departed hover round the graves and their former homes, and that the natives of the Gold Coast believe that there is an Unterwelt, or Shadow Land, beneath the ground, to which the soul migrates as soon as life is extinguished. The spirit then resumes the rank which it had upon the earth.* In thus confining the illustrations to Africa alone, we see how in one continent, which has the advantage for our researches of being in what we call a savage or primitive condition, the most divergent evidence can be found for the existence or non-existence of a belief in immortality. Of course the want of this belief cannot be considered as disposing of the question whether religion or a belief in a God or Gods is ever totally absent from man, however primitive or degraded. For it is quite possible to believe in the existence of God without having a faith in immortality, and, as enunciated by a celebrated abstract thinker, to possess a religion without a belief in a God.

That this question is essentially an anthropological one is evident, from the way in which it is discussed by all writers on man's development, either physically, mentally, or socially; and perhaps one result of the somewhat conflicting statements to which we have alluded in a few instances only, may be found in the different verdicts given by some of our most eminent anthropologists. Sir John Lubbock is very strong on the negative side, and the result of his inquiries has shown him that sailors, traders, and philosophers, Roman Catholic priests and Protestant missionaries, in ancient and in modern times, in every part of the globe, have concurred in stating that there are races of men altogether devoid of religion. And the case was the stronger because, in several instances, the fact had greatly surprised the traveller who recorded it, and had been entirely in opposition to all his preconceived views.† Mr. Tylor, however, is much more cautious on this point, and considers that "the assertion that rude non-religious tribes have been known in actual existence, though in theory possible, and, perhaps, in fact true, does not at present rest on that sufficient proof which, for an exceptional state of things, we are entitled to demand.‡ And this seems certainly well shown by the instances which he then gives of travellers actually contradicting themselves, unknowingly, upon the point, and who, he states, "seem hardly to have recognised anything short of the

* "African Sketch Book," vol. ii. p. 129.
† "Origin of Civilisation," 3rd edition, p. 201.
‡ "Primitive Culture," vol. i. p. 378.

organised and established theology of the higher races as being religion at all."*

These differences of view seem, however, to have another cause than the want of reliable data from qualified travellers, and this cause as intimately affects the traveller himself as the philosopher who studies his reports. What constitutes a religion, and what shall be considered worthy of that name? Is there a primeval germ that has given birth to all the great religious institutions of the world? And if so, how shall we recognise it? Is it a craving inherent in man to explain what is mysterious—an equivalent to that universal psychological condition which endeavours to formulate the unknowable? A doubt as to the strict definition of the word seems to be latent in all writings on the subject. Sir John Lubbock, at the commencement of his chapter on Religion, remarks that he felt doubtful whether he should not have used the word "superstition" rather than the term "religion" of savages.† And, speaking of the Australians as not believing in the existence of a Deity, he also tells us that "morality is not in any way connected with their religion, if such it can be called."‡ I do not know whether Sir John Lubbock would make morality a test of religion, but we must remember that morality—really the science of man's duties—is in constant unison with the knowledge of the age; that in all religions men of strictest faith look back upon certain episodes in the records of those religions which, judged by current standards of morality, must perforce be styled immoral. If this is so, looking back in primitive time by the light of the fossilised primitive races of the present day, where duty is simply existence, and the necessity of the wants of that existence being satisfied, where the doctrine of self reigns supreme, because a society has not arisen with its benefits bestowed for services rendered, we shall certainly find here the smallest crumb of morality, though we may come across a loaf of superstition. But, bringing the word into our nineteenth century "civilisation," the question as to what shall be considered the union of religion and morality still remains unanswered, as may be witnessed by our School Board debates. Till we have solved this difficulty among ourselves, may it not be as well to postpone our verdict as to whether a rough, uncultured, undeveloped, primitive race possesses no religion because that religion possesses no morality. A reference to Mr. Spencer's "Descriptive Sociology" will show how slowly, even in this country, morality was influenced by either religion

* "Primitive Culture," vol. i. p. 379.
† "Origin of Civilisation," 3rd edition, p. 195.
‡ Ibid., p. 312.

or culture. To take a selection from that work (Part i. Table ii.), and as it stands in chronological order, we find that:

By end of seventh century whole Church a single organisation, irrespective of divisions of kingdoms. Had synods, in which minor ecclesiastical affairs settled. . . . . Witenagemot made ecclesiastical as civil laws. Bishops appointed by king and Witan, independent of Pope (though many Roman forms adopted), and Pope not allowed to overrule appointments. Liturgies, ritual, and prayers in English.	Progress of ecclesiastical domination in Sunday observance. Labour forbidden; then amusements and relaxations restricted; then number of hours held sacred increased.	In 8th century a labouring man was held disgraced if he could not sing to the harp.	Increase of gross vices; long and late carousing; open concubinage; increase of treachery, &c., &c.

Mr. Tylor—and who should be a better judge—with his immense collection of anthropological facts, thinks it best, as a minimum definition of religion, to style it "the belief in spiritual beings."* This would clearly make it difficult indeed to find a non-religious people; but if religion is to be used by the comparative psychologist or sociologist as a test of the evolution of culture, shall we not have the greatest difficulty in settling the spiritual beings in which it shall be considered as rational to believe? Take only, for instance, among ourselves the divergent opinions on this subject held by three schools, each containing some of our most eminent men. I allude to the teachings of science, the teachings of Rome, and the teachings of spiritualism. In these three schools combined could be found, I venture to think, the religious concepts of the world, if we accept the definition, "a belief in spiritual beings."

Again, Mr. Darwin truly remarks that "there is no evidence that man was aboriginally endowed with the ennobling belief in the existence of an omnipotent God.† But, on the other hand, there is evidence that in all ages, and in all stages of culture, there have been most highly intellectual and cultured men who were not endowed with that belief. Not only do we see this in the teachings of the Manicheans of the third century, but in Mr. Mill's last posthumous work we find that he was of opinion that "those who have been strengthened in goodness by relying on the sympathising support of a powerful and good Governor of the world, had, he was satisfied, never really believed that Governor to be, in the strict sense of the term, omnipotent. They had always saved his goodness at the expense of his

* "Primitive Culture," vol. i. p. 383.
† "Descent of Man," 2nd edition, p. 93.

power.* And thus, though undoubtedly, as Mr. Darwin states, aboriginal man was not endowed with a belief in the existence of an omnipotent God, we still find the same belief absent in ages and minds far removed from the early dawn of rational thought.†

If we leave anthropologists, who have dealt with the subject, and approach other writers on the same, we shall find much less sign of an universal definition. Lord Lyttleton thus expresses himself on the point: "Religion, I take it, can be sufficiently defined in a general way, or at least in one aspect, as some positive and palpable belief in, or expectation of, a life to come after this. The Nirvana of Buddhism—a belief in future annihilation—is not a religion; it is the denial, the contradictory of all religion."‡ I may, perhaps, venture to deny that anthropologists are prepared to accept this dictum. Should such a course be taken the difficulty would be increased; stern logic would demand a treatment of the early Jews, which is not usually given in theological literature.

A recent writer on natural religion considers that man to believe in a God who feels himself in the presence of a power apart from and immeasurably above his own.§ But this experience by some is not considered as confined to man alone. As an instance of this, in a paper by the Rev. F. W. Farrar,‖ referred to by Mr. Darwin in his "Descent of Man," we are told that "a vague fear of the unknown is found even among animals, and is widely different from the belief in a God;" and, again, that "all races, probably, have a fear of the unknown." Another phase of the problem appears in the fact that there is no superstitious, religious, or animistic code of ideas which is either totally confined to a primitive age, or which does not appear in some form in times and centres of what we term high civilisation. The broad waters of animism percolate everywhere the soil of humanity, flowing freely through the regions of savagedom, and bubbling up in innumerable springs throughout the length and breadth of the most cultured areas. Psychology has yet to tell us to what extent a survival of superstitions may be synchronous with a high state of mental culture; the exact laws which govern spiritualistic beliefs, and the nature and cause of the ideas which formulate them. We must also study the different aspects of animistic and religious thought, as held by the educated and the ignorant, the rich and the very poor,

* "Three Essays on Religion," p. 39.
† See also Oscar Schmidt, "Doctrine of Descent and Darwinism," p. 302.
‡ *Contemporary Review*, vol. xxiv. p. 655.
§ *Macmillan's Magazine*, vol. xxxi. p. 365.
‖ *Anthropological Review*, August, 1864, p. ccxvii.

the healthy and vigorous, and the weak and diseased; the changes effected by foreign ideas, and the rites and customs of other creeds; the results of the positive teachings of science; advances in the stages of public opinion; reflex action of politics, such as an era of Liberalism or a period of Conservative legislation. It may be the most crass obtuseness, but to the mind of the writer religious views have never proved a test of civilisation. Sir John Lubbock, in his bold and vigorous classification of early religions, considers the first great stage to be a state which does not imply a denial of the existence of a Deity, but an absence of any definite ideas on the subject.* Might not this be called Agnosticism? Our great thinker, Mr. Spencer, has thus expressed himself upon the subject: "The religious sentiment may find its highest sphere in the belief that the ultimate Power is no more representable in terms of human consciousness than human consciousness is representable in terms of a plant's function."† With this may also be compared the latest utterances of Mr. Matthew Arnold.

The "Anthropological Notes and Queries," framed by the leaders of this Institute, will now enable the traveller who will use them to give us reliable information, and, no doubt, one day from the seed contained in that little volume will be reaped a plentiful harvest of truly scientific anthropological researches. But in the meantime "of making books there is no end," and religion will be still made to play the part of test in regions of comparative psychology and anthropology.

If, therefore, the term religion is so undefinable in the minds of most thinkers, must it not necessarily be an inexact word as used in our science? And, as it is often made a psychological condition of which, and from which, we may estimate a people's condition and a society's development, is there not danger in letting such great issues depend upon a misunderstood or little understood term? We must either treat it theologically or scientifically. If in the first manner, it had better be left to the use of theologians. But, if we look at it in a scientific light, perhaps the utmost we can say in definition of a religion is that it is a rule of life. A very primitive people may have a rule of life which is very opposed to our own. Revenge may be looked upon as a duty, and gross vices as pleasures; as a correlative, the creed, if such is acknowledged, will be in unison with such a mode of thought and such a social condition. But without we trespass on the domains of theology, and thus acquire an *odium theologicum* as well as an *odium anthropologicum*,

* "Origin of Civilisation," 3rd edition, p. 198.
† *Contemporary Review*, vol. xx. pp. 153-4.

we can only estimate a national religion by the standard of a national character; and this, I need scarcely remark, is not the usually accepted definition. I would therefore respectfully ask anthropologists whether it might not be better to discard the use of the term Religion in anthropological discussions altogether as being an undefined term, and as such not admissible in science. It can be no offence to theology to leave its subject-matter solely to itself, science reserving the like claims on its own behalf. That the study of anthropology would gain thereby is, I think, scarcely doubtful. In our ethnological inquiries we are dependent upon the descriptions of travellers. Should the term "religion" be mentioned, it is a theological, not what is called a scientific expression, for science has as yet not used the word in any one particular and unchanging sense. It is opening afresh the everlasting argument as to civilisation and religion; the interdependence of the two and the question which is to be called cause and which effect. The development of man from something worse is gradually being established as a fact, and his capability of development to something better is slowly becoming a creed under the advancement of scientific conceptions. May it not be as well, in furtherance of such a cause, and in the true spirit of science, either to give the word "religion" some universal definition, cease to use it altogether, or in its place to substitute a term alike capable of being conceived and incapable of being misunderstood.

Discussion.

Mr. Tylor pointed out that theology and morals are not only theoretically separable, but among many nations are found actually separate, theological doctrine and worship existing without reference to human conduct, and morality existing under social sanctions, but without reference to the deities, who are not supposed to concern themselves with man's behaviour to his neighbours. He considered that theology should describe doctrines relating to spiritual beings, while morals should take in the social rules of human conduct, and agreed with Mr. Distant, that the present mode of combining these two subjects under the indiscriminate term of Religion was at present an impediment to correct description in anthropology.

Dr. Spratt said, it was well known that those who are blind can frequently define objects when approaching them. It has been already chronicled and handed down that visions do appear of what is passing before the eyes both at night and in broad daylight, though the only apparent causes be some constitutional predisposition for a given taste, design, or the result of fear. Such powers of the nervous system so influenced, either in the normal or abnormal state, were spoken of by the ancients, but were more or less

looked upon in these days in connection with superstition and a divine and higher power.

Mr. MOGGRIDGE said—I agree with the doubt thrown out by Mr. Distant, at the conclusion of his very able paper, as to the desirableness of religion being admitted as a subject for our discussions here; indeed I thought that it, as well as politics, was excluded by all scientific societies. Some form of religion has, in all ages, generally obtained, with occasionally a few brilliant exceptions. In very early times the adoration of visible objects became frequent —of the sun for instance, and what more natural than the selection of that glorious luminary, the source of light and warmth, essential alike to animate and inanimate nature. The moon, the more brilliant stars, departed heroes, and living animals, were not without their worshippers; but generally there was one God recognised as supreme—the Jupiter of the system. Probably Abraham was the first who endeavoured to get rid of the minor deities, and to concentrate the love and affection of mankind upon the one Supreme. Nearly all religions were accompanied by a belief in a future life; in some cases that belief was vague and uncertain. Even Tacitus, foremost as he was among the more intelligent of the Romans, puts it hypothetically: "*Si* quis piorum manibus locus, *si, ut sapientibus placet*, non cum corpore exstinguunter magnæ animæ, placide quiescas." Far lower in the intellectual scale, but happier in his belief, is the wild savage—

> Lo! the poor Indian, whose untutored mind
> Sees God in clouds, or hears him in the wind,
> His soul proud science never taught to stray
> Far as the solar walk or milky way;
> But simple nature to his hopes hath given,
> Beyond the cloud-capped hill some humbler heaven,
> Some better world in depths of woods embraced,
> Some happier island in the watery waste.

Thus there has always been a prevailing belief in some all-ruling Power too vast for finite faculties to comprehend, but the object of adoration and love to some, of adoration and fear to others.

Mr. PARK HARRISON said: The term "religion" had certainly a very wide signification, but this was so with the Latin word also, which included "superstition" as well as religion (in its ordinary sense). There did not appear to be any possibility or need of alteration. It was not the province of anthropology to criticise systems of religion; all that could be done was to describe in as accurate a way as possible tenets and ceremonies, and to note the kind of morality that *appeared* to be associated with them.

Mr. JEREMIAH and others took part in the discussion, and

Mr. DISTANT said: The issue raised in my paper is not what religion is supposed to be, but what the term really means when used in anthropology, and to this point I must confine the few remarks I have to make in reply to what has been said on the subject. For purposes of condensation I was compelled to omit many facts and references bearing upon the necessity of some definition over and

above the few which I have given. A paper may thus be either too long or too short. Its length may hide its meaning, and its shortness may not express it. To the objection that my views would exclude the study of the religions of the different races, I can only reply that I have asked for a definition of the term "religion," in order that we may pursue that study on a truly scientific basis. A gentleman has alluded to Professor Max Muller, who is certainly a very high authority, and one whom I can quote for my cause. In his address to the Aryan section of the International Congress of Orientalists, held in 1874, speaking of the difficulty in deciding whether savage tribes had a religion or not, he remarked that he considered the introduction to Mr. Spencer's "First Principles" deeply religious, but could understand that a missionary reporting on a tribe of Spencerian savages might declare that they had no idea of a religion whatever.

The meeting then separated.

ANTHROPOLOGICAL MISCELLANEA.

ON HUMAN HAIR AS A RACE CHARACTER,

Examined by the aid of the Microscope. By Dr. Pruner-Bey.

Preliminary Observations.

From the highest antiquity has the human hair attracted the attention of observers; but, down to a very recent period, it was merely the contour and the external aspect which were taken into consideration. These two characters were thus at all times indicated as distinguishing nations and individuals. The terms λειότριχες, συλότριχες ξανθοὶ, πυῤῥοὶ, &c., constantly occur in Greek authors and their successors.

Modern science has somewhat enlarged the field of observation as regards colour; but it was only by the use of the microscope that we are enabled to add fresh characters to those accessible to the naked eye. It is by these means that Heusinger was enabled to indicate the elliptic form of the hair of the negro. Koelliker confirmed this observation, and added other characters. Erdl applied the microscope to the study of the colour in animals. Brown finally, according to the tendency of the American school, published in the remarkable work of Schoolcraft, his researches, in which he endeavours to establish specific characters, or nearly so, for the hair of the Aryan, the Negro, the Chinese, and the American, both in the form of the bulb and the body, and also in the structure of the latter, at least as regards the presence or the absence of the so-called medullary canal.

This question has for many years excited my warmest interest. What, an anatomical system at present considered merely as a secretion of the skin, or at any rate as a simple appendage, should this represent clearly defined distinctive characters in the races of man inhabiting the globe? What, a single hair sufficient finally to distinguish one stock from another? At first, this seemed to be absolutely impossible. Nevertheless, on turning our attention to the animal kingdom as a whole, and specially to the vertebrate animals, the variety and importance of these appendages become incontestable at once. In fishes and amphibia they assume the form of scales; that of feathers in birds; and even in certain mammifers prickles are substituted for fleece. The felt of wild animals presents some distinct and constant characters in colour, texture, and distribution. In man, excepting some regions, as the face (in the male), the armpits, the pubes, &c., the surface presents generally only the rudiments of the fleece of animals; it is the hair of the head which distinguishes man in this respect.

I do not enter in this paper into the minute or elementary structure of the human hair. In this respect man differs no more from the animal than in the other organic systems, as regards their ultimate elements; hence there can obtain no difference between two human races. But, as we shall presently see, there is a great difference in the conformation of the bulb or the body, as seen in transverse sections; and such there is also in the relative volume, the disposition and the contents of the medullary canal, which may even be absent. These characters can only be studied by the aid of the microscope. I have thought it proper microscopically to examine also the down on different regions of the body in individuals belonging to our race; the apes also, specially the anthropoids, seemed to me to deserve a place in this investigation.

I take this opportunity to return my sincere thanks to those honourable *savants* who have furnished me with samples of hair for microscopic examination. Without the kind aid of Messrs. Quatrefages, E. Rousseau, de Montagu, d'Abbadie, l'Abbé Domeneck, E. Duhousset, and Potteau, this unpretending treatise would probably never have seen the light.

I sincerely regret that, for certain races which inhabited or still inhabit North America and High Asia, I had no materials at hand. I would, however, fain believe that the varied forms of human air are all represented by the samples I had at my disposal, and that, consequently, those peoples I was compelled to omit may be ranged by the side of such made known in these researches.

II.—*The External Characters of Human Hair as seen by the Naked Eye.*

The hair of the races of man presents, at first sight, very striking peculiarities in regard to its length, abundance, colour, and its smooth, curly, frizzled, crisp, or woolly condition, quite apart from the grotesque forms given to it by artificial practices which are met with both among the most civilised and the most savage peoples. This fact shows the importance which man instinctively and voluntarily has everywhere attached to that ornament which decks his head and frames his face, the noblest parts of his body.

We shall now examine the extreme variation of the characters visible to the naked eye. As regards the length of the hair, what a contrast between the stiff and sleek hair of the Blackfeet and the Sioux,* which almost reaches the heel, and the twisted tufts of the Negress and the Bosjesman, which scarcely reach the shoulder! We must take note, that the length of the hair greatly differs in the two sexes of the same stock; its length also varies so much in the same race, and even in the same families, that it is unnecessary to dwell on this character. We possess, moreover, no certain data in this respect; but, at all events, we must, to some

* The hair of the mummies of the Aymarás of Peru is also distinguished by its length and stiffness.

extent, attribute the peculiarity both to the influence of climate and aliment.

The abundance of hair is subject to so many individual variations, that it cannot form a really distinctive character. As a general rule, the finer and more supple the hair, the greater the number of hairs in a given space. On this point, we need merely to compare the head of the Negro with that of an American.

The colour of the hair has at all times fixed the attention of travellers and authors. On the one hand, it harmonises to a certain degree with the colour of the skin and the iris; and, on the other, it presents more or less persistence, according to race. Black hair is met with in nearly all parts of the globe—under the equator, the pole, as well as in the temperate zone. It is the appanage of the Esquimaux, as well as that of the Negro, the Hindoo, the Malay, and of many European nations. Such is not the case in regard to the other extreme of the chromatic scale; viz. the light hair, with its nearly imperceptible shades between flaxen, straw, and gold colour, to which we must add carroty and fiery red hair. From this last there is a transition to reddish brown, from this to light brown, dark brown, or chestnut, &c. Among these innumerable shades, the light hair belongs to but few races, which chiefly inhabit Europe; such as the Germanic branches, Slaves and Celts of the Aryan stock, and the Finnish branch of the Turanian stock. Some light-haired individuals are found among other peoples; as among the Armenians, who are partly of Aryan origin, the Semitics of Syria, among the Jews, and perhaps in Africa among the Berbers of the Atlas.* The red hair, on the contrary, seems represented, at least by some individuals, in all known races, whether equatorial or boreal. Whilst the red colour forms on the one hand, as it were, a bond of union between the most distinct races, the brown colour may be considered as establishing the transition between the light and the darkest shade. In point of fact, there are, excepting the Negroes, few black-haired races among whom there are not many instances of brown hair, approaching more or less the red. This applies both to the inhabitants of the highest north, as to the Polynesian islanders, to the Americans, as well as to the Turanians, &c.

The inhabitants of Africa, exclusive of the northern coast, present few variations in the colour of the hair. This is also the case in America, where black and brown predominate. Some rare exceptions in Peru and among the Mandans deserve notice. As regards the Peruvians, we have as yet no right to discard the idea of inter-

* Among the Berbers, I have hitherto only found that ash-grey colour which is also met with among other allophyletic nations in Arabia, Egypt, among the Turks, &c. It must, moreover, be borne in mind, that the use of lie-wash, of powders and ointments, produces an artificial colour of the hair. I have seen all kinds of shades, from a fiery red to a silvery white, produced by these means. Just as originally dark hair may become discoloured by such means, so may it, *vice versâ*, appear black, as I found in a wig from the Fiji Islands. A thick black powder encrusted the circumference of each hair, and the original brown colour could only be seen after repeated washings.

mixture; and as to some Mandans with light and silvery hair, living in subterraneous cabins, they always appeared to me to owe that peculiarity to a partial leucosis. Oceania resembles in this respect America, presenting the same colours, and probably less exceptions. It is different in Asia; but there also must the black and brown be considered as the most prevalent colours, excepting on some spots in the high table lands of the Himalaya, and specially in the west of that continent, where the juxtaposition or the intermixture of different races present samples of all shades of hair, as we find in Europe, here and there. It is the Aryan race in its numerous ramifications which inhabits these regions, and which presents, besides all the cranial forms, also all shades in the hair, from the jet black hair of the Hindoo to the pale yellow of the German or the Slavonian.

From what precedes, we arrive at the conclusion that the colour of the hair alone is insufficient to characterise a race; for we have seen that the same colour—black, for instance—is the appanage of almost all the great groups of mankind, and that all shades may be met with in one and the same race. It is this last circumstance which must be taken in account in considering the question whether the colour of hair in a race may change in time and a different climate. Though numerous documents seem to refute the idea of a change, I must ask how we can explain the great variety of colour in the Aryan family, supposed to have descended from one stock; I, moreover, must appeal to daily observation. How many children with fair or reddish hair do not at puberty have it changed into nut-brown! A change in a contrary direction, that is to say, from dark to light (apart from the gradual change to white by age), is rare, though not absolutely impossible. The variegated colour of the hair of an individual, and even in a single hair from the bulb to the point, must not be omitted; nor the different colour of the down covering various parts of the same body.

Characters as important as those of colour are deduced from the stiffness, flexibility, straight or frizzled condition of the hair. The hair is *smooth* when the hairs are rectilinear, *curly* when they curve at the extremity, *frizzled* when they form curves in their whole length, and *crisp* when they are disposed in small or large ringlets resembling wool.

Perfectly smooth hair is the appanage of the Americans, the peoples of High Asia, China, Japan, Malasia, &c. It is less common in Europe, and almost unknown in Africa. Curly hair is more or less found in the Aryan race, among the Semitics, in Polynesia and Australia, and individually also among the races cited above. Frizzled hair is very prevalent in Africa, arising frequently from the commixture of Nigritian blood, as in Egypt, in Abyssinia, amongst the Gallas, &c. It is also sporadically found among the Arabs and the Jews; more rarely among some European Aryans. The crisp hair predominates in Africa among the Negroes, the Hottentots, and in Melanesia.

As regards the latter region we must establish a distinction. Although there are Papuas with very fine hair, separated in tufts, crisp, and approaching that of the Negro and Hottentot, there are others who are "*mop-headed*," wearing those enormous wigs, of which we possess descriptions and samples, and whose hair is far from presenting the characters of the first variety, as we shall show from microscopic examination. We must here notice that Africa contains peoples possessing similar wigs as the Hadendoas, and that the Cafusos of South America offer another instance of this kind. I have, even in Europe, met with three individuals whose hair had the same aspect; but I had no opportunity of subjecting them to microscopic examination.

The general form which results from the stiffness or flexibility of the hair appeared to me the most striking and persistent character. There is no negro without more or less crisp hair; there is no American without hair like a horse-mane, so to say; no Aryan who possesses either of these characteristic hairs on the head. With such a result, furnished by simple inspection, we ask, what is the cause of this diversity? It is for the microscope to answer the question. It will tell us that these differences result from the thickness and the contours of the hair, apart from the various dispositions which characterise the interior of the body of the hair, which will also be revealed to us by the instrument.

One word on the implantation of the hair on the surface of the integument, before proceeding to microscopic examination. In the great majority of the races of man, the hair issues from its cutaneous envelope in an oblique direction, and the disposition of the hairs and the down presents, according to the regions of the head and the body, the aspect of vortices, eccentric and concentric curves. In the Hottentot, the Papuan, with crisp hair, and in a great portion of Negro peoples, the hair is implanted perpendicularly,* and disposed in large or small round tufts. The Bosjesman presents, as far as I am aware, the smallest tufts.

III.—*General Observations on the Hair examined by the Microscope in a Longitudinal Direction.*

I distinguish, like all anatomists, in each hair the root and the stem. The first consists of the bulb and the papilla. With regard to the shaft, it is not sufficient to examine it at any point in its length; it is requisite separately to examine the base, and specially the point, which presents certain peculiarities. The elements composing the hair are the epithelium, the cortical or fibrous, and the medullary substance.

1. The Root.—The great diversity in aspect exhibited by the hair of different races, leads to the supposition that the root should, if not in structure, at least in conformation, present some notable differences. And, in fact, I have, in the hair belonging to indivi-

* Is this diversity caused by the great thickness of the scalp in the Nigritian races?

duals of different races, found bulbs and roots cylindrical, conical, spindle or club shaped, and others of globular form, or flattened at the base. Contractions and incisions were not wanting. The inferior extremity may be very slender or enlarged, and, in the first case, curved like a hook. I have seen such roots in desiccated hair torn from their follicles.

At the beginning of my researches, I felt inclined to consider the variations in the form of the root as race peculiarities; but, on extending my observations to a number of individuals, I changed my opinion. The reasons why I attach no importance to the form of the bulb are the following. In the first place, I found that individuals of the same race present remarkable differences in the form of the hair-bulb, and, what is more, even the hairs of the same individual show great diversities in this respect. All this may be explained by the metamorphosis of the bulb during its development, and by its gradual atrophy, which accompanies the falling off of the hair. To arrive in this respect at a fair result, we ought to examine the fresh bulbs of sound hair, which I have hitherto had no opportunity of doing.

2. The Shaft.—The shaft, when subjected to microscopic examination in the direction of its length, presents differences according to the state of its development. For, before attaining its full growth, the hair passes, so to say, through an embryonic stage; and it is noteworthy that the down is abundantly intermingled with the hair in the polar races, as, for instance, in the Esquimaux and Laps.* In this stage the hair is transparent, having in the above races the appearance of a silvered empty tube; for I have never been able to detect the cellular thread which characterises the hair with a medullary substance. Whenever the point of the hair is finely drawn out, it contains a very transparent central canal. In such cases the transverse partitions gradually disappear on approaching the point; even the hair of the Bosjesman and the American possess this character.† It is rare that the portion of the stem contained in the follicle, though transparent, shows a well-defined canal.

Every hair completely developed, and examined longitudinally by the aid of the microscope, belongs to one of the following classes:—

(*a*) It presents in its whole tract a central line perfectly diaphanous, with well-defined sides, more or less wide, according to the decreasing or diminishing thickness of the hair. We are

* The same condition is observed in animals of the polar regions, in the polar dog.

† When the point of the hair, not being very fine, terminates in a pencil, the tubes composing it are equally transparent. The same thing is observed in the knots which I have seen on the hair of the inhabitants of the Deccan. These knots are bristling with small transparent and diverging tubes. I am inclined to consider these cylindrical and diaphanous cellules as the primitive element of the cortical substance, which changes its form by the juxtaposition in the mass of the stem.

involuntarily led to consider the silvery portion a canal without medullary substance. I have employed no reagents to assure myself whether it has a cellular structure; I simply describe what I have seen, without engaging in histological researches. I also ignore whether this canal be empty or whether it contains air, a gaseous or oily fluid. I simply confine myself to describe its presence.

(*b*) In a second class of hair we perceive a cellular canal positively filled, and with less regular margins than in the first class. It is frequently broken off, and we find in its place a transparent gap, without any medullary substance. This is distinguished from the cortical substance by its tint, which is either darker, as a general rule, or lighter, or has a greyish, smoky aspect, specially in white hair. Thus, in black hair, the medullary substance is brownish when visible; in dark brown hair it is reddish or orange colour; it is of a golden yellow in lighter coloured hair, whether perceived in the whole tract of the hair in the form of a full canal, or whether it merely presents more or less elongated cellular clusters, which usually diminish in thickness towards their extremities.

(*c*) There is a third class of hair which, apart from the cutaneous extremity and the point, presents nothing in the whole tract indicative that the structure of the centre differs from the rest. There are only here and there seen fine whitish lines which might be taken as interstices situated between the elongated or fibrous cellules which constitute the cortical substance.

In reviewing the human races, and distributing them according to the three categories just established, we place in the first category the Aryan family, and specially its branches with light hair. It is only by way of exception that we find the medullary canal empty and silvery in the light hair of some Berbers, Turks, or ancient Egyptians; and in such cases the origin of the individual might be somewhat doubtful. But even in the Aryan race, the presence of a diaphanous canal is not constant. It is found in most Europeans with light hair, as in Germans, Slavonians, Celts, Frenchmen, Italians, &c. In Ireland the presence of a full canal is found in the hair of some light individuals, and the dark-haired European nations also possess, at least in the thick hairs, a distinct medullary substance, whilst the finest hairs of the same head have an empty canal. What, therefore, constitutes the rule in the light hair of the Aryans of Europe occurs in our country as an exception in the dark hair of the same race.*

To the second category belong the greater portion of human races, such as the Esquimaux, the Laps, the Americans in general, the Turanians, the Polynesians, the Australians, &c.

The third class comprises the blackest hair. Thus, the Negro,

* The Aryans of Asia, the Persians, and the Hindoos, for instance, whose hair is very black, belong either to the second or third category; either their hair presents the medullary coloured thread, or nothing particular can be distinguished in the centre.

the Papuan, the inhabitants of Southern India, the Malays, &c., possess hair which, examined in a longitudinal direction, present no difference between the cortical and the medullary substance. We should, however, deceive ourselves in deducing from this a general rule as regards these peoples. For, when the hair of a Bosjesman or a Negro is less deep in colour, when it approaches brown or red, the medullary substance is seen as distinct as in other races. Besides, though in jet black hair the substance is not visible, we are not justified in concluding that it is altogether absent.

After what has been stated, we attach only a relative value to the preceding classification; for we have just seen that the Aryan race presents in its different branches all the indicated varieties as regards the relations of the central substance to the peripheral. We must also bear in mind that the hair of the same individual belongs, according to the degree of its development, or the variety of colour, to either of these categories. I have further observed that the three conditions indicated may be found in the same hair: thus, the point and the inferior extremity of the stem may have a diaphanous centre; the adjoining portions of these parts may have a coloured medullary thread; whilst in the intermediate portion neither of the above conditions exists.

Whilst the inspection of the hair in a longitudinal direction is indispensable for the appreciation of the value of the indicated differences, it is nevertheless insufficient to establish a convenient base of classification. There is another method to attain our object: by subjecting to the microscope the transverse section.

IV.—*Microscopic Examination of the Transverse Sections of Hair.*

The transverse sections of hair must be as fine as possible. Whenever they are coarsely made, the hair collapses in the direction of its length, and we then cannot properly estimate its circumference. I used for my observations a small microscope by Oberhaeuser, Flandin's micrometer, and microtome, very carefully manufactured by Mr. Hartnaek. Without the microtome it seems to me very difficult, if not impossible, to obtain transverse sections sufficiently fine for exact study.

The figures accompanying my description express *hundreds of millimeters*. The transverse section of the hair is sometimes quite circular, but frequently more or less elongated, when two diameters must be indicated. I always place the large diameter before the second, separating them by the mark (:) indicative of their proportion. It must also be borne in mind that the two terms of the proportion express the *absolute dimensions* in hundreds of millimeters.

The transverse sections of the hair enable us to examine the form of their contour, and to establish their different diameters and their thickness by micrometry, as well as to assure ourself of the presence or absence of a medullary substance, and its relation to the

cortical substance. By these means the differential characters, if any exist in the human races, may be clearly established.

This portion of my researches being the most important, I have, for the convenience of the reader, adjoined plates. In order to exclude, on my part, any preconceived idea, I abstain from formulating in this place a rigorous classification; for, before classifying, we must ascertain whether the subject admits of it. Nevertheless, in order to proceed methodically, I separate the three great races of man in well-known groups, *e.g.* as Aryans, whatever their *habitat;* whilst at the same time I comprise such races whose hair presents analogous characters as in Negroes and certain Papuans.

Before entering into any details, I must offer some remarks, in order to avoid repetition. Hairs plucked from the same head always differ in thickness, sometimes in colour, as well as in the presence or absence of the medullary substance, and its relations to the cortical substance. It is not so as regards the form of their contours; *that is nearly constant in the same individual, except in crossbreeds.* Taking these facts into consideration, I have always examined numerous sections of several hairs of the same individual, besides which I have examined the hair of several individuals belonging to the same race. As I cannot in the plates represent all the sections I made, I shall confine myself to describe their general form without neglecting such which most deviate from it. I now proceed to the microscopic examination of the transverse sections of the human hair.

The reader is requested to supply, by the study of the plates, the brevity of the descriptions. The ordinary ciphers and the French or Greek letters will easily enable the reader to find the figures corresponding to the indications of the text.

1. Negroes (vi).* Among the six Negroes there was only one in whom the form of the contours of some of his hairs differed from the usual form.† This is elliptic in the great majority of cases. Exceptionally the ellipsis presents an inwardly curved margin, the section is then reniform, or rather the ellipsis presents a depressed spot. As a mean term, the diameters of the Negro hair are 20 : 12. The finer the hair, the greater the proportion of the small to the large diameter; thus, whilst the thickest hairs give 30 : 15,‡ the finest hair gave 18 : 10, and even 15 : 10; and if these three proportions are reduced to hundreds, it will be found that the large diameter being represented by 100, the small diameter is 50 in the thickest hair, 55 in the intermediate, and 66 in the finest hair. From these data it appears that the hair of the Negro is flattened in proportion to its thickness. In the six samples, one of which is of red colour, one-half present the medullary substance perfectly distinct, at least in most of the sections. It is distinguished by a *small* central and circumscribed spot of the same form as that of the hair.

* The Roman numbers indicate the number of individuals whose hair was examined by the indicated method.

† Three sections presented in this individual a nearly circular form.

‡ The individual to whom these hairs belonged was born in Buenos Ayres.

in the sections as well as in the other three individuals examined, the medullary substance is absent; some marblings are, however, visible along the whole section. The hair of the Negro is thus elliptical and much flattened.* The medullary substance does not always exist; the centre is never empty.

2. Hottentot—Bosjesman (I). The hairs of the individual examined are some black and some white, their form being that of the Negro. The ellipsis is, however, somewhat narrower; for, as a mean term, the two diameters are 20 : 11. The sections of the white hair show the medullary substance separated, whilst the black are only marbled.

β The hair from the pubes of the Bosjesman female, known under the name of the Hottentot Venus, presented a very flattened ellipsis; the diameters, the thickest of them, are 20 : 10. Some of the sections are kidney-shaped. No trace of a medullary substance. The small circles produced by the scrolling are but 1·5 millimeters in width.

3. Papuans of New Guinea (II). *a.* One of the heads of hair is very crisp; the form of its transverse sections, though always elliptic, is distinguished by the irregularity of one of its borders, which is either quite straight, or curved inwards in one or two spots; some sections are pointed at one of their extremities;† the proportions of the diameters denote *the greatest flattening which* I have found in human hair. The following are the dimensions—29 : 10 and 25 : 7 for the flattest; and 25 : 14 for the widest. The presence of the medullary substance is the rule in this individual, but the central spot which indicates it, is more contracted than in the Negro.

b. In the second individual, whose hairs are a little thicker, the contours of the ellipsis are more regular, though sometimes flattened on one of their borders. Diameters 32 : 14 and 28 : 13; no medullary substance in this Papuan, except in one section.

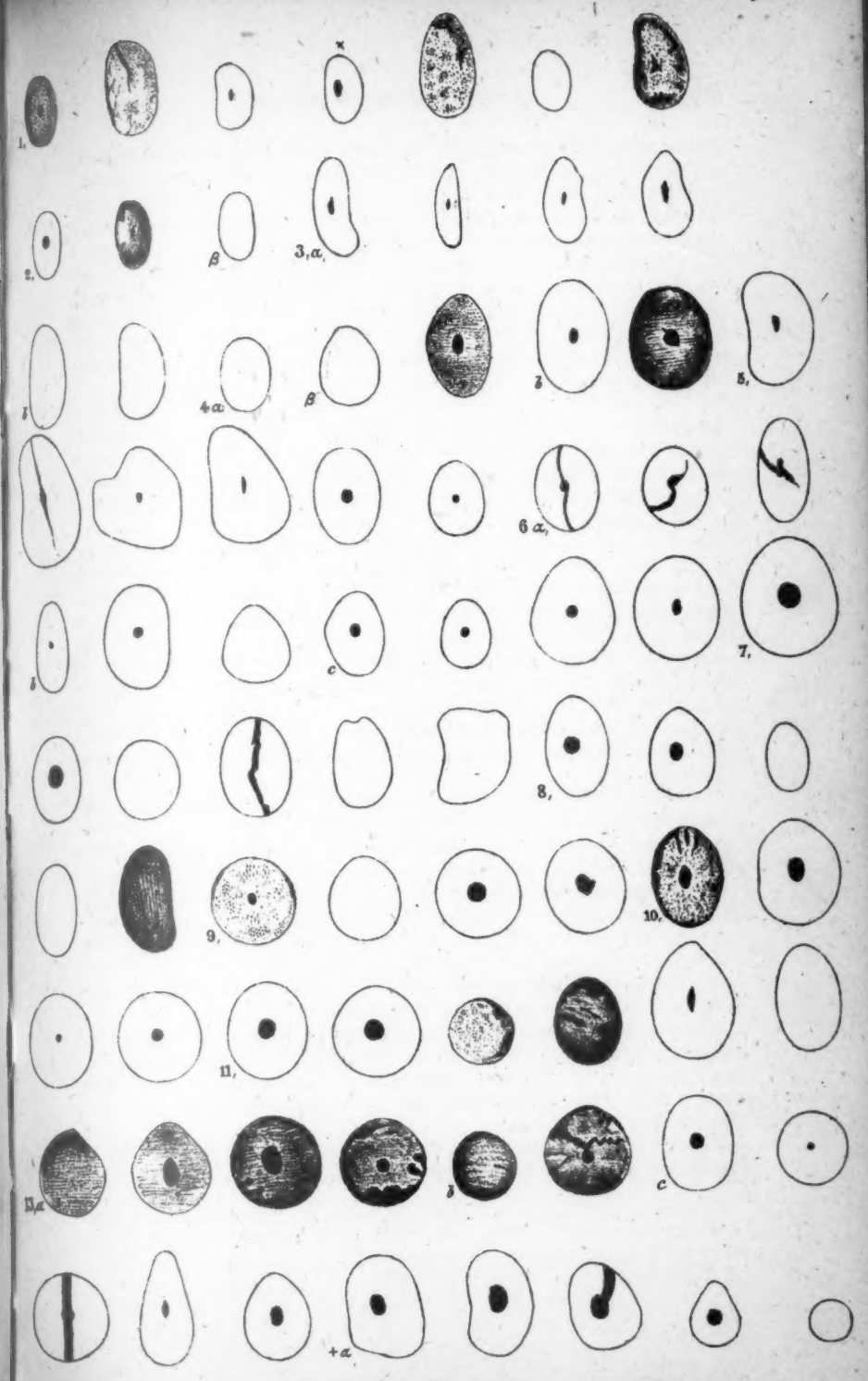
4. Melanesians of Oceania. *a. From New Zealand* (IV). Three samples of these four heads of hair are of a yellow-reddish colour, the fourth is ash-grey; these are likely discoloured by some hair wash. One sample presents the crisp aspect of the Negro hair, the rest present circles which succeed each other at different distances, so as to form tresses rather than tufts.

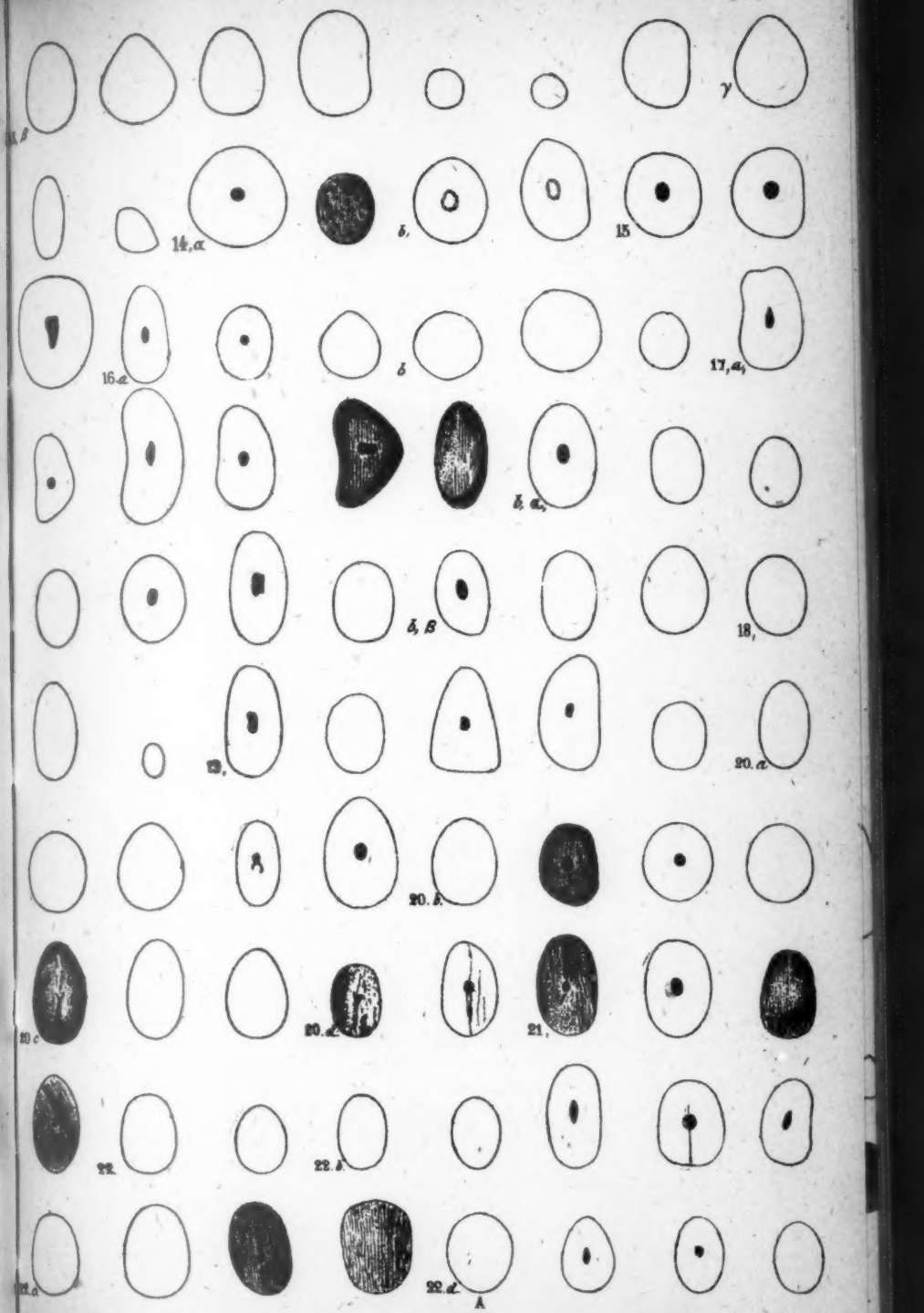
Though the general form of the sections is in these four samples still elliptic, it approaches the oval form by the enlargement of its small diameter. The crisp hair of the first sample, *a*, gives the diameters 22 : 15, whilst in the others, β, the measures give 24 : 18 30 : 20; 33 : 22.

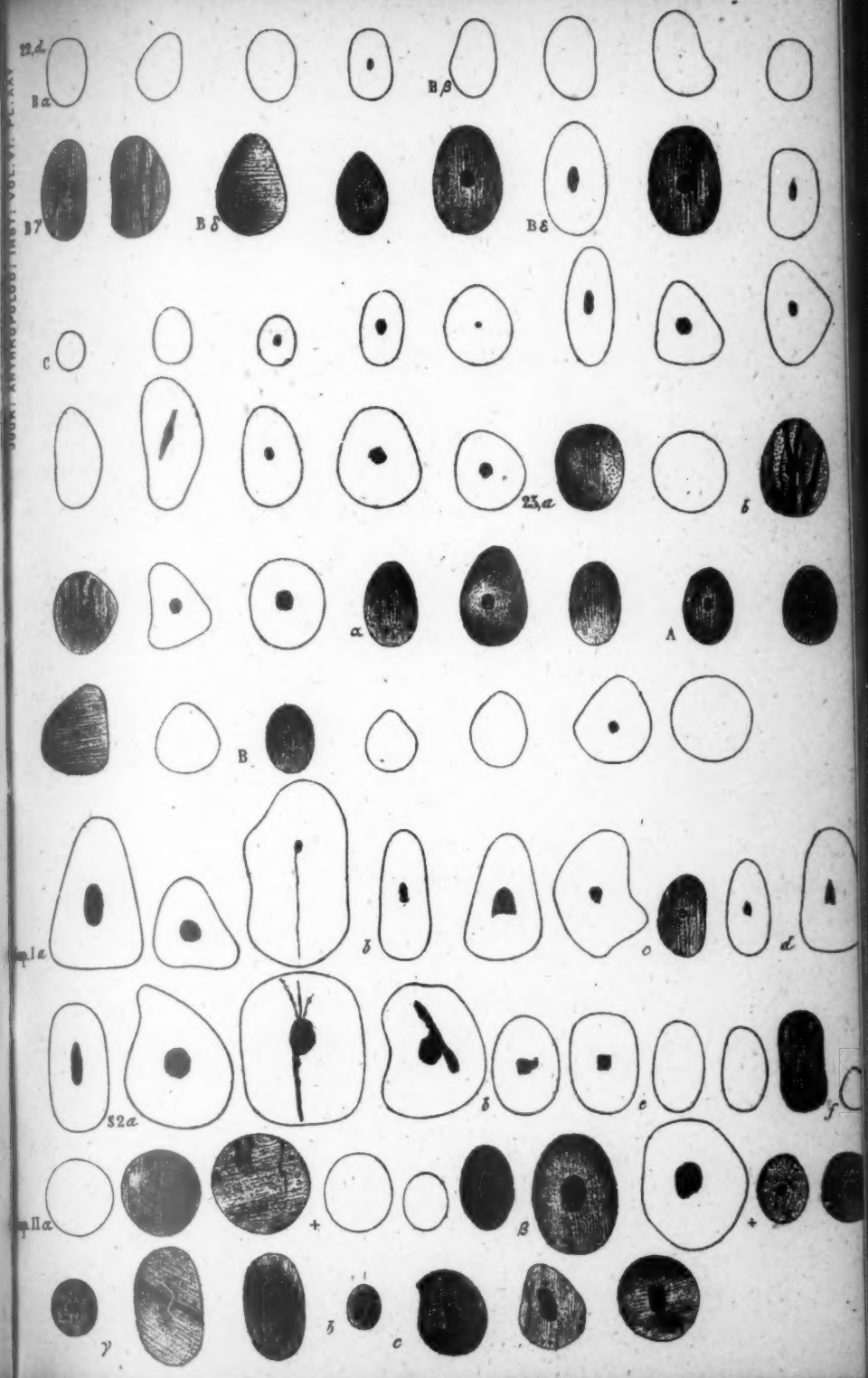
These hairs are generally thicker than those of the Negro, and it is a question whether the Malayo-Polynesian blood, so prevalent in

* The flattening is seen in the direction of the scroll. The small circles caused in rolling present a width of 3·5 to 4 millimeters when the hairs are very fine, and in the contrary case of 5 to 8 millimeters.

† Compare with the Negro of Buenos Ayres.


1.
2.
3, α.
β.
4 α.
β.
5.
6 α.
7.
8.
9.
10.
11.
12 α.
b.
c.
4 α.


γ
14, α
δ,
15
16. α
δ
17, α,
δ, α,
δ, β
18,
19,
20. α
20. β
20. c
20. d
21,
22.
22. δ
22. d
A


22,d
Bα
Bβ
B7
Bδ
Bε
C
23,a
b
a
A
B
1a
b
c
d
82a
b
c
f
IIα
+
β
+
γ
b
c

Melanesia, did not run in the veins of the individuals whose hair is under examination. As regards the medullary substance, it is present in two samples and absent in the rest.

b. Néo-Caledonians (I). The same doubts as regards origin arise in the only specimen of hair I possess from New Caledonia. By its long exposure to the air the colour is ash-grey; it is much curled in all its length; the form of the section approaches the oval, but the margins are somewhat curved; the diameters vary between 30 : 20 and 27 : 25; the medullary substance is well defined.

c. Tasmanians (II). Two specimens from Van Diemen's Land, one black, the other yellowish-white, approach the hair of the New Irelanders by their tresses, their diameters, and internal dispositions. Diameters of the black hairs = 25 : 15; of the light hairs = 25 : 15 to 27 : 20. The first has no medullary substance; the second has it much enlarged.

5. Archipelago Fiji (IV). Two of the four specimens are of a reddish flaxen colour, the two others blackish-brown. One of the last heads of hair has the appearance of a large mop-shaped, very crisp wig. This and the two first are characterised by the great thickness of each individual hair, the yellow or orange colour in the interior of the sections, the large black central spot, and by the elliptical form of the contours, which predominates in spite of the irregularities presented in this respect by the hairs of the wig; where we observe reniform and triangular sections with depressed points and irregular margins, forms which are seen in the hairs of the beard in the Aryan race. Diameters = 35 : 20 and 33 : 20 in two individuals; but in the wig we find 40 : 22; 37 : 22, and even 37 : 20 for the elliptical sections with regular form.

One of the specimens, which is of a blackish brown, is distinguished from the rest by its relative fineness, and by the tendency of its sections to the oval form. Diameters = 28 : 20 and 22 : 16.

6. Polynesia. *a. Nukahiva* (I). Hair slightly frizzled and dark brown. The sections of the thick hairs have an elliptic form, whilst the fine hairs tend to the circular form.* Diameters = 30 : 15; 30 : 20; 25 : 20, and 22 : 10. The interior of these sections is reddish and marbled, scarcely any trace of a central spot.

b. Tikopia (II). One specimen of hair smooth, amber colour; the second specimen, of the same colour, but intermixed with reddish-brown hairs. Besides the ellipsis ordinarily with one straight border, there are observed sections enlarged in their small diameter and approaching the oval form. The diameters vary between 30 : 20; 27 : 12, and 27 or 23 : 20. The interior of the section presents the central spot or marblings.

c. New Zealand (III). These three scalps, black and dark brown in colour, show in their sections a greater tendency to the circular form than the preceding. Diameters = 30 : 20; 30 : 25; 25 : 17, and 20 : 15. The central spot is very distinct.

7. Malasia (I). Hair of a Malay girl, jet black, and slightly

* Should this be a cross-bred?

curled at the point; it presents, in its sections, forms intermediate between the circle and the perfect oval. Diameters = 35 : 27; 26 : 18; 25 : 17; 28 : 20, and 23 : 20. Some sections are irregular; the greater portions are only marbled; others have a central spot.

8. Australia (II). Hair from Port St. George; black, much scrolled, and consequently of doubtful origin, presents in its sections an enlarged and irregular ellipsis. Diameters = 30 : 20; 25 : 20. Central spot very large.

Another specimen from the same country; colour red and very curly, consisting of finer hair, the sections of which are much flattened; their predominant form is the irregular ellipsis; there are also reniform sections. Diameters 25 : 15 to 25 : 30. Marblings without central spot.

9. Japanese (II). Man, and a girl seventeen years old. Hair of the male very black, stiff, and glossy; sections *perfectly round.* Their diameter is comprised between 25 and 22. The interior is marbled, rarely containing a small central spot. The sections of the hair of the girl present the same regular forms; most are round, some elongated; all have a large central spot. Diameters = 25 for the round, and 27 : 23 for the elongated.

10. Siamese (IV). Hair black and smooth. Besides perfectly circular sections, there are, in all individuals, some a little elongated. These latter present the following diameters = 28 : 20; 27 : 24; 26 : 24; and the largest are 30 : 23; 30 : 25. The greater part of the sections have a small central spot.

11. Chinese (I). The hairs of the Chinese present sections of various forms, from the circular to the elliptic; the ellipsis is, however, never narrow. The following are the diameters for the elongated sections = 33 : 24; 30 : 21; 31 : 19; 30 : 25. The central spot is met with in one-half of the sections.

A cross-bred, whose father is a Chinese, and the mother a Siamese, presented in the sections of the hair a more or less circular form without any central spot.

12. Americans from the North (I). I had only a few hairs from the cranium of a Choctaw at my disposal. The form of the sections of the fine hairs is nearly circular, whilst that of the thick hairs is somewhat elongated. The diameters of the latter are = 25 : 20. In the interior are seen marblings rather than central spots.

13. Americans of the South. *a. Mummies of Aymarás of Peru* (II). Hair very smooth, of considerable length, and of red colour, approaching brown. The form of the sections is nearly circular; but the margins are nearly always irregular and angular. The most elongated rings have diameters from 25 and 26 : 23. The central spot which exists in most of the sections is very large.

b. Americans of the South (I).* Hair black and coarse. The principal form of sections is a circle of 25 in diameter, with a small central spot. The diameters of the elongated sections are = 20 : 19,

* Without any indication as regards origin.

and present in their interior marblings rather than a separate medullary substance.

c. Tribe of the Jambas (I)*. This glossy, dark, and very coarse hair, presents all forms from oval to the circle; hence a great variation as regards the diameter = 33 : 15; 33 : 22; 25 : 20; 25 : 23. Small central spot in all the sections.

It appears to me of interest to add to the preceding observations relating to deceased persons of probably pure origin, the following three made on living subjects of the same continent.

a. M. M——, a native of the Peruvian Andes, aged sixty-three according to his own account a pure Indian. He is of lank stature; cranium brachycephalous and square, as usual in the Aymara race; cheekbones slightly prominent. The colour of the skin, and the *ensemble* of his physiognomy and stature, do not show his origin; the form of the cerebral cranium is, however, decidedly Indian. Let us now see what says the hair, which M. M—— assures us was formerly light, but is now whitened, inclining to a greenish-yellow; it is also stiff.

What strikes us in the sections of this hair, is the complete irregularity in its contours,† and the tendency of the small diameter to enlarge; a single section, which is the smallest of the five I have examined, presents the circular form without central spot. In all the others the medullary canal is very large. Diameters = 30 : 18; 30 : 22; 25 : 20; 18 : 15, and 12 : 12.

β The son of the preceding, a boy twelve years old, whose mother is also an Indian woman, has a head of hair very abundant, thick, slightly wavy, dark brown.‡ The sections of his hair are distinguished by their irregular contours; the smallest are rounded or square, whilst the larger are rather elongated. The form of the latter varies between a widened oval and pointed on one side (27 : 25), and an ellipsis with more or less interrupted borders (30 : 17; 30 : 20; 25 : 20). No traces of a medullary substance; the centre is transparent. Will this be the case at a more advanced age? We doubt it, as the father possesses the usual pigment, and we shall see in the sequel, in the children of the Basques, that they are in the same condition compared with the adults.

γ. M. M——z, of Lima, aged twenty-three. His father is a Spaniard, his mother an Indian. His hair is black, fine, very curly. The form of the sections presents, only exceptionally, that of an ellipsis (25 : 13), of a widened oval (26 : 21), and of triangles blunted at the points. The centre is perfectly transparent. Mr. M——z has the features of the Spanish stock, and slightly Semitic.

14. Esquimaux (II). One of the specimens, black in colour, presents a round, or but little elongated form. Diameter of the

* Province of Macas.

† This peculiarity appears to me to depend somewhat on age; for I have observed it, though less marked, in the hair of aged Aryans.

‡ Excepting in the colour of the skin, the boy presents the Indian type.

first = 30, of the second = 20 : 17. Another specimen, altered in colour and in structure by its position in the earth, presents, besides round, also elliptical sections, with irregular, straight, or curved borders. The diameters vary from 36 : 20 to 25 : 22. Whilst the first specimen of hair is marbled in its sections, the second shows, in the middle of these sections, large holes with regular contours. Thus the medullary substance resisted decomposition less than the cortical.

15. Mongol (I). Hair reddish brown, intermixed with red hair. The form of the sections approaches the circular. Diameters = 33 : 30 ; 25 : 23 ; 27 : 22. The central spot is large, and nowhere absent.

16. Turks (II). One of the specimens, yellowish-grey, belongs to a Turk of Smyrna.* Though there are some rounded sections without central spot, the greater portion are very elongated, and present a small spot in the centre. The diameter of the latter varies between 30 : 15 and 23 : 17. The second of these sections belonged to a Kouroglou of Algeria. It is greyish-red, and is distinguished by the predominance of the round form in its sections, some of which are of a wide oval form = 17 : 15. It is noteworthy that the centre of all the sections is perfectly diaphanous.

17. Egyptians. *a. Modern* (II). Though one specimen of these hairs be slightly frizzled and the second smooth, they present a great analogy in the form of their sections. The colour is intensely black. The predominant form is the ellipsis, with very irregular borders ; most of the sections are reniform. By the side of these curved ellipses there are some very abnormal in form, more or less triangular.† In the ellipsis the diameters are 40 : 17 ; 30 : 18 and 17 ; 30 : 15 ; in the finest hairs, 25 : 15 ; 28 : 15. Central spot very large in all the sections.

b. Mummies (VI) ; *a. with thick black hair* (III). Of these antique specimens of hair one only exactly corresponds with the preceding by the generally elliptical form of its sections and by the thickness of the hair (33 : 17 ; 33 : 20), as well as by the well marked central spots. The two other specimens show, in the form of their sections, a tendency towards the oval form (30 : 20 ; 22 : 15 ; 20 : 15). These are somewhat finer, with more regular contours ; the medulla is not always separate from the cortical substance.

β. Two specimens are brown inclining to red, and one is of reddish-yellow colour (III). The hair in these specimens is finer than in the black. The darkest incline towards the enlarged oval form, of which the following are the proportions, 25 and 26 : 20 ; 23 : 17 and 18. Most of the sections have a transparent centre, a few only show a small spot. The two lightest specimens furnished elliptical, mixed with oval sections, of the following dimensions : *a*, 25 : 15 and 20 ; 11 and 12 ;‡ *b*, 25 : 20 ; 25 : 15 and 15 : 10. We

* The origin of this individual is doubtful.

† Compare the wig of the Fiji with the hair of the beard.

‡ *a* reminds us of the Bosjesman and the Negro, and *b* of the Aryan ; but the presence of the two forms upon the same head modifies the first impression.

must also notice that *a* presents the central spots, whilst that of *b* is perfectly diaphanous.

18. Berber Kabyle (1). The form of the sections varies between the ellipsis and the oval. Diameters = 28 : 17 ; 26 : 15 ; 25 and 23 : 18 ; no central spot.

19. Arab (1). This specimen of black hair presents in the sections chiefly the elongated irregular ellipsis (34 : 18 ; 32 : 16), with small central spots, also some triangular sections* by the side of a secondary form, which is oval (23 : 17 ; 20 : 16), and without any central spot.

20. East Indians. By the kindness of Mr. de Montagu and his friends in India, Colonel Pope, Colonel Speak, and Dr. Leith, I am in possession of sixteen specimens of hair from natives of the Presidency of Bombay and the Central Deccan. In order not to encumber this short sketch with too many details, I shall confine myself to state the result of my researches on the hair of such native Indians considered as belonging to the primitive stock, to which I shall add the Hindoo Brahman as a member of the Aryan family. These specimens of hair are all, without exception, of a jet black, metallic or silky gloss, and the hairs more or less fine and curly ; all this is probably the effect of climate. By the aid of the microscope we may ascertain what belongs to the race.

a. Gond (1). The predominant form of the sections is elliptical (25 : 13 and 15) ; others present the pointed oval form (25 : 20), and there are some few perfectly round. Marblings in the interior ; no central spot.

b. Kole (11). Scarcely any section of elliptical form ; the greater number incline towards the wide oval ; generally great tendency towards circular contours. Diameters 33 : 22 ; 23 : 17 ; 25 : 20 ; 23 : 20. Marblings, or very small central spots.

c. Bhil (1). Form of sections, either an irregular ellipsis or an enlarged oval. In the first variety there is usually a small central spot ; in the second only marblings. Diameters 30 : 17 and 20 ; 26 : 18 ; 20 : 17.

† As regards the form of the sections all the other specimens belonging to the natives of India may be divided into two classes. Either it is the reniform ellipsis with a central spot which predominates, as for instance in a man of Ahmedabad, in a Varouli, and a Kathkouri ; or the form is circular mixed with irregular sections, which predominate, as in an individual of Mhar. In this specimen the central spot is seen also in the nearly circular sections. These specimens present on the whole in their sections the two extreme forms. Ordinarily one of these forms predominates in the same head, intermixed with intermediate oval forms. My researches are, however, not sufficiently advanced to show in such cases the primitive forms and the stock from which they are derived. I can only state the facts.

* Compare with the modern Egyptian, in whom there is sometimes a mixture of Arab blood.

d. Brahman (I). Very regular form of sections presenting a striking resemblance to each other; sometimes an ellipsis, the long borders of which very straight, the small curved, sometimes an oval. Diameters, 22 : 14; 28 : 16. A small central spot well defined, presents the same contours as the section in general.

21. PERSIANS (II). The hair of these two specimens is somewhat thicker, as in the preceding. The forms of the sections are the same, namely, oviform ellipses, but with more equally curved border. Diameters, 30 : 17; 29 : 18; 29 : 20; 26 : 17. In one specimen the centre is diaphanous, in the second there is a well defined small spot.

22. ARYANS OF EUROPE. *a. Italian* (I). Hair chestnut colour. Sections oval, 23 : 17; 20 : 15; centre transparent.

b. Germans (IV). Hair sombre flaxen, or light chestnut colour; two specimens of males and two of females. The general form of the sections is oval and regular. Exceptionally the borders are somewhat straight, angular or curved. Among a considerable number of sections the flattest is 30 : 16, and the most circular 25 : 30. The great majority presents the following dimensions: 22 : 15; 21 : 15; 25 : 15. In one specimen of the two males, and one of the two females, the centre of all the sections is transparent; in the other of the male it is only transparent in some, and in the second female specimen it is scarcely transparent in any.

c. Lithuanians (II). The colour of these two specimens is of straw-yellow.* The sections are oval, with a tendency to the circular form, specially so in one specimen. Diameters, *a*, 24 : 19; 27 : 20; *b*, 28 : 17; 28 : 20; 23 : 20. The centre is, without exception, transparent.

d. Irish (XLVIII). Excepting a single specimen obtained from a turf-pit, this collection has been formed from living persons by Abbé Domeneck. I have subjected all these samples of hair to a double examination; first, to ascertain the variations of the hair in a nation comparatively little mixed, and composed, as history teaches, to a great extent of Aryan elements; and, secondly, to assure myself whether there be an allophyletic stock intermixed with the Aryans. Moreover, accident having placed at my disposal a specimen of hair of great antiquity, its comparison with that of the living might furnish a base for the establishment of what is constant in human races, even in a system of the organism which presents such small proportions.

A. The hair obtained from the turf-pit is smooth and reddish-brown. Sections oviform and elliptical = 22 : 16; 22 : 15; 20 : 15. The centre presents in most cases a small central spot; it is diaphanous in others.

B. The other forty-seven specimens may, according to their colour, be divided into three series, of which the first (16) comprises light hair, mostly golden light; the second (16) com-

* The cranial type of these two young savants is that of the Slavonian race, both in the cerebral as well as the facial cranium.

prises dark hair; and the third (15) black hair. To spare the reader the trouble of tiresome details, I present a summary of the results obtained by the examination of the sections. And first, with regard to the volume of the hairs, the lighter the colour the finer the hairs, and *vice versâ*. This rule is, however, subject to exceptions; there are three specimens of golden light, the hair of which attains the thickness of the black hairs. As regards the form of the contours of the sections, there is not a single specimen which does not present elliptical or oval sections; but whilst this is the predominant and almost exclusive form in the light hair, there are, on the contrary, in the dark specimens, besides elongated sections, others more or less circular. The irregular contours are rare in the first variety, and very frequent in the second. The light and fine hairs have generally a transparent centre, whilst the black as well as coarse light hair present central spots, at times very large. When now we consider the sufficiently constant form and volume of the hair belonging to the branches of the Aryan family, characters which are to a considerable extent found among the Irish, we can only, as regards the variations, attribute them to the commixture of a foreign element.* The examination of the hair of Basques will confirm this view. It results farther, from this examination, that in the intermixture of races there may be not merely fusion, but a change of characters; at least as regards the hair.

The following table, containing the measures of the extreme forms, will support the preceding remarks :—

B. Light Hair.	C. Black Hair.
Ordinary Proportions with Transparent Centre.	
α. 20 : 15; 21 : 15; 20 : 13.	22 : 13; 15 : 12; 12 : 11.
β. 27 : 12; 25 : 12; 25 : 15; 20 : 12; 20 : 15.	31 : 20; 35 : 15; 24 : 20; 25 : 20.
Exceptional Proportions and Central Spots.	
γ. 30 : 16; 26 : 16.	34 : 15; 30 : 16; 27 : 15.
δ. 32 : 20; 30 : 21; 25 : 15.	30 : 18; 30 : 25.
ε. 34 : 19; 33 : 21; 27 : 15.	32 : 20; 23 : 21.

23. Basques. All shades, from flaxen to deep black, are represented in the Basques of the present day. The light colour is preferentially found among those inhabiting the coast and the highest mountains. The average colour of the hair of the Basques is chestnut.† The light hair curls very easily, which is generally not the case with the black.

a. Specimen of black hair from a child aged 11; some light

* The craniological researches of Mr. Wilde evidently prove that, before the historical epoch, there existed in Ireland, as well as in England, Scotland, France, &c., two different races, the one brachycephalous, and the other dolichocephalous.

† The Basques are, in my opinion, far from constituting a homogeneous race. I believe them, on the contrary, to be much mixed. The marriages of the ancient Iberians with the Celts have been already noticed by the classical authors. The study of the physical type, specially of the cranium (see M. Broca's collection in the Museum of the Society), confirm these historical data.

coloured hair in the occipital region. All the sections approach the circular form; the most elongated are 25 : 20. No central spot.

b. Adult male with stiff black hair. All the sections are oval or enlarged ellipses; some are triangular. Central spot well marked. Diameters, 29 : 20; 23 : 18; 24 : 22; 27 : 23.

It is evident that these specimens approach both the American and the Turanian, just as the language of the Basques recalls the Iberian origin.

We now examine the light hair.

a. Specimen of light colour inclining to chestnut, wavy, much curled. Sections elongated and oviform, most of them without central spot. Diameters = 30 : 15; 30 : 20; 25 : 15.

In order to show the effect of the commixture of heterogeneous races, as for instance the Aryan and Iberian, I have examined the hair of two brothers, whose father is a Basque and the mother an Irishwoman. The following are the results of the examination:—

A. Chestnut coloured hair, intermixed with white hairs, slightly curled. Most of the sections are elliptical, narrow, with a diaphanous centre. Diameters = 25 : 15; 22 : 17; 22 : 15. But besides this predominant form, there are circular and triangular sections, &c. These latter sections have sometimes a small central spot.

B. Hair darker and stiffer. The elongated form of the sections is not absent (30 : 15; 25 : 17; 20 : 15; 20 : 17); but more than one-half of the sections approach the circular form and have a central spot, though it is smaller than in the Basque with black hair.*

24. *French.* The hair of the French, of which I have examined a considerable number of specimens, presents all the shades and forms found in the series 22 and 23, which is explained by the multiplicity of ethnic elements which compose that great nation.

SUPPLEMENT.

I.—*Examination of the hair in some other parts of the body.*

1. *Italians.—a.* Moustaches. Hair, white and yellowish. Most of the sections are very irregular in form, resembling, for example, a triangle, or the form of the sole of a shoe, &c.† These thick hairs attain considerable dimensions; the following are the measurements: 55 : 30; 48 : 30; 45 : 30; 27 : 25. The central spot is of relative size. In no section is it entirely absent.

b. The hairs on the genitals are also very thick; their contours are more regular, though some have very singular forms. In the sections with regular forms, the central spots are relatively small. Diameters = 38 : 15; 38 : 18; 38 : 23.

c. The hairs on the coccygian region are fine, and approach, much

* Of these two brothers, A represents the elongated cranium of the Celts, despite the Iberian origin of his father; whilst the cranium of B is rounder.

† That which is the exception in the hairs of some individuals, is the rule as regards the beard.

more than the preceding, the hair on the head, by their dimensions and forms. Diameters = 23 : 14; 28 : 13. Scarcely any traces of a central spot.

d. The hairs on the chest present generally the form of a shoe-sole; some of the sections are more regularly elliptical. Diameters = 38 : 37 and 36 : 20. Large central spot.

e. The hairs of the armpit, all with very diaphanous centres present in their sections more or less regular ellipses. Diameters = 30 : 16; 32 : 18; 30 : 13; 23 : 15.

2. *German.* The same characters as in the Italian are observed in the hair of the beard and the armpit. The hairs on the genitals present no abnormal form.

f. The down on the back of the hand presents in the section the oval form with transparent centre. Diameter = 13 : 9.

II.—*Hairs on the heads of Anthropomorphous Apes.*

a. Male Chimpanzee. The sections are large: between 30 and 23. Their form is generally circular or nearly so: for example 25 : 24.

Female Chimpanzee. Hair somewhat finer. The complete circular form more rare, approaching rather the oval. Diameters = 24 : 20; 18 : 14, and exceptionally 25 : 16.

In both sexes no trace of a medullary canal.

β. Male Adult Gorilla. Hairs very thick. The form of the sections rather irregular; partakes of the ellipsis and the oval. Diameters = 37 : 25; 35 : 25; 40 : 31; in the finest = 27 : 23. The medullary canal is enormously large.

† *Young Female Gorilla.* Hairs finer. Their sections are either very regular, or with borders, if not angular, at least deviating from the regular curve. Diameters = 20 : 15;* 22 : 16; 17 : 10. The medullary canal is small and *rarely placed in the centre.*

γ. Orang-Outang. Sections large and elongated in ellipses, without central spots. Diameters = 35 : 20; 31 : 18.

b. Gibbon (*Rafflesii*). Hairs extremely fine. Sections oval and very regular, without central spots. Diameters = 15 : 12; 13 : 10.

c. Cynocephalous Baboon. Besides circular sections there are some elongated, with irregular contours. Diameters of the first = 25; of the second, 25 : 20. Central spots *very large and elongated.*

Résumé.

1. Microscopic examination accounts for the different aspects which the hair of the human races presents to the naked eye. The flatter the hair the more it curls, and the rounder the hair, the more stiff and smooth it becomes.

2. One extreme end of the scale is represented by the Papuas, the Bosjesmans, and the Negroes; the other by the Polynesians, the Malays, the Siamese, the Japanese, the Turanians, and Americans, not excepting the Esquimaux. The Aryans occupy the intermediate space.

* A striking analogy, in early age, with the Ayran race, at least in regard to the diameters of the first two sections.

3. The Basques differ from the Aryan stock as much by their hair as by their language.

4. Cross-breds are recognisable by the fusion and juxtaposition of the characters inherent in the hair of their parents.

5. It is much less the anatomical disposition of the constituent elements, than the *form* of the hair, which produces the characteristic differences. Anatomically there would only be the transparent centre deprived of medullary substance in some branches of the Aryan race which would deserve to be considered. But the fine points of the hair belonging to allophyletic races, as well as their down, present the same peculiarity.

6. A single hair, presenting the average form characteristic of the race, might serve to define it. But without pretending to this degree of certainty, it is indubitable that the hair of the individual bears the stamp of his origin.

7. Though there are appreciable differences in the form of hairs in the same individual, the extreme forms are only met upon the same head where there is commixture of blood.

8. The small scale assigned to the diameters of the hair explains the relative resemblances between single hairs belonging to individuals of different stocks; but in spite of this apparent inconvenience, the general or predominant form of the sections does not in the same race transgress certain limits, and it is upon this that we must base our diagnosis.

9. The hair examined by our method appears to us to possess an incontestable value for the study of characters inherent in the races of man.

10. Some will find in it forms of transition, for instance, from the Polynesian to the Melanesian, from the Malay and Lithuanian to the Turanian, &c.; from this and the Basque to the American, &c.; whilst others may energetically point out the different and constant forms even in this apparently insignificant appendage of the skin.

11. It is with the form of the hair as with the form of the cranium, however unequal may be the importance of these two characters.

12. I have confined myself to the study of facts. But whilst admiring the incomparable wisdom of the Creator, who has so marvellously diversified what is apparently so minute, I declare my inability to trace it back to the origin of the creature.

Explanation of the Plates, which represent the transverse sections of hair of the following races.—I. Magnified 320 diameters.

PLATE XXIII.

1. Negroes.
2. Hottentot Bosjeman.
   β Hair from the pubes of the Bosjeman female known as the Hottentot Venus.
3. *a* Papuans of New Guinea.
   b Variety among the same race.
4. Melanesians of Oceania.
   a „ New Zealand.
   β „ Variety among the same.

b Melanesians of New Caledonia.
5. Archipelago—Fiji.
6. Polynesia.
a Nukahiva.
b Ticopia.
c New Zealand.
7. Malasia.
8. Australia.
9. Japanese.
10. Siamese.
11. Chinese.
13. Americans, South.
a Aymara mummy from Peru.
b An unknown tribe.
c Jamba tribe (Province of Macas).
†*a* Native of Peruvian Andes.

PLATE XXIV.

Peruvians—*Continued.*
β Son of preceding.
γ Native of Lima, Spanish father, Indian mother.
14. Esquimo.
b Another specimen.
15. Mongol.
16. Turk.
a Native of Smyrna.
b Kouroglou of Algeria.
17. Egyptian.
a Modern.
ba Mummy, thick black hair.
bβ „ reddish yellow hair.
18. Berber Kabyle.
19. Arab.
20. East Indians.
a Gond.
b Kole.
c Bhil.
d Brahman.
21. Persian.
22. Aryans of Europe.
a Italian.
b German.
c Lithuanian.
d Irish.
A From a turf pit.

PLATE XXV.

Irish—*Continued.*
22*d* B Modern light hair.
a Hair with transparent centre and of small circumference.
$\gamma\delta\epsilon$ Hair with the central spot and of large circumference.
C Black hair.
23. Basques.
a Black hair, infant eleven years of age.
b Black hair, adult.
a Light hair.
A & B Hair of two brothers who have a Basque father and Irish mother.

SUPPLEMENT.

I. Hair from various parts of the body.
I. Italian.
a Moustaches.
b Hair from genital region.
c Hair from coccygean region.
d Hair from chest.
II. German.
a Moustaches.
b Hair from genital region.
e Hair from armpits.
f Down from back of hand.
II. Hair from head of Anthropomorphous apes.
a Male chimpanzee.

† Female chimpanzee.	γ Orang-outang.
β Male adult gorilla.	*b* Gibbon (Raffley).
† Female „ „	*c* Cynocephalous baboon.

The foregoing translation of Dr. Pruner-Bey's paper was published in the "Anthropological Review," vol. ii. 1864, but without the accompanying plates. It has now been thought desirable to republish the whole with Dr. Paul Broca's kind consent, and this paper will be followed in a future number of this Journal by a translation of a further paper on the same subject by the same author, with explanatory plates.

TREATISE ON MAN. By George Harris, LL.D., F.S.A., &c. (Vice-President Anthropological Institute).

Dr. George Harris, F.S.A., Vice-President of the Anthropological Institute and of the Psychological Society, has published the results of much thought and study in "A Philosophical Treatise on the Nature and Constitution of Man." 2 vols.* His object, as stated by himself, "is to afford a comprehensive and complete survey of the nature of man as regards his intelligent being; to exhibit the direct and immediate connection of each department in his constitution with its corresponding relation, and to demonstrate the uniform mechanism of the whole as one entire and consistent system." The work, it will be seen, occupies a widely different ground from that taken by those treatises on anthropology which are devoted to the patient accumulation and comparison of the facts collected by observers of the physical and mental characteristics of man. The author remarks that while he has gathered much from the study of books, and has learnt still more from the study of the world, he has gained most of all from the study of himself—from looking inwardly. If this avowal should be thought to render criticism difficult in a journal mainly devoted to accumulating the materials for large induction, it will not detract from the real anthropological value of the work, which, we are told, has occupied the leisure of many years of the author's life. Those who know the author and his previous writings well enough to anticipate that they will find in it thoughtful and scholarly writing, elegant and well-chosen English, will not meet with any disappointment in its perusal. Added value is given to it by the interesting circumstance that the proof-sheets of several portions were submitted to learned friends of the author—such as Sir John Lubbock, Dr. Richardson, Dr. Newman, and many others—and have been enriched by their comments.

One characteristic of Dr. Harris's works is that he leans rather towards the older authorities than the newer lights in the numerous quotations he makes. Even Jacob Behmen's speculations are noticed, and he is described, with truth, as a "very remarkable and original, and most suggestive, although occasionally extravagant and mysterious writer." Prefixed to the "Treatise" is a pre-

* London: G. Bell and Sons, 1876.

liminary dissertation, in which the origin of animated beings, their constitution, the different kinds of vitality, and the functions of soul, mind, and spirit are discussed in a tone of due reverence. In these respects Dr. Harris enters into speculations of so high a character that they cannot suitably be discussed in these pages, since they concern the essence and operation of spiritual beings and the possibilities of the future state. As to the organ of intelligence—the brain—he remarks, "we certainly do find that men's intellectual characters do conform very much with the general shape of the brain; and" he adds, "the expression of their countenance." His remarks on the dissolution of union between soul and body, and on the spiritual endowment existent in animals, have already been communicated in substance to the Anthropological Institute, as well as to the British Association (see this Journal, ii. 69; iii. 73). The considerations as to the mutual relations of reason and instinct then laid before the members, however, are here pushed further, and the probabilities of future existence for animals after death and their condition therein, are discussed.

The body of the work is divided into three books, dealing respectively with the medial, the moral, and the mental nature and constitution of man. The medial properties, described in Book I., are so called, "being entirely of that middle or intermediate nature, strictly essentially, and exclusively, neither animal nor material, nor entirely either physical, moral, or intellectual. They cannot, indeed, as a class, be rightly termed animal, inasmuch as of certain of them animals do not partake. They cannot be termed material or physical, because they do not exclusively either belong to, or arise in the body. They are not strictly moral or intellectual, as beings who have no endowments belonging to this part of our nature are fully gifted with them. The medial endowments, however, reside n, or arise out of, certain properties common to each of these several parts of our system. The main and special characteristic is therefore of a middle or intermediate kind between animal and intellectual nature, although belonging entirely, strictly, and properly to neither alone, but appertaining in part to each, and being essentially of a mixed order."

The qualities described under this head are sensation, emotion, appetite, passion, and affection; in conjunction with the latter, animal attachment is also considered. "Sensation is the power possessed by the material frame, or by some part or organ belonging to it, of receiving the impression, reflection, or image of any object independent of the object itself." From sensation to emotion the transition is easy and natural. Emotions are divided into material and mental, and again into simple and complex. The simple emotions are pain and grief, pleasure and joy, irritation and surprise. The complex emotions are attachment and aversion, fear and hope, sorrow and mirth, suspense, curiosity, pride, shame, pity, admiration, and envy. An appetite is "defined to be an agitation or excitement of a painful nature, arising in some part or organ of the body, according to the nature of the particular appetite; and which

feeling is accompanied by, or productive of, an impulse to the commission of some specific act, immediately calculated to appease such appetite." These are hunger and concupiscence, and Dr. Harris discusses the physical organisation connected with both, their growth and maturity, their legitimate objects, functions, and influences, the varieties of their operation, the means of exercising restraint and discipline over them, and the different manner of their excitement and action in man and other organised beings. The distinction between appetite and passion is laid down as follows:—"As the appetites consist in certain vehement excitements, originating principally in the material part of our being, extending their influence to, and ultimately impelling, the soul as well; so the passions, on the other hand, consist in certain excitements no less powerful, although generally less permanent, originating primarily in the soul, and extending their influence to, and ultimately impelling also the body." These are anger, terror, and love. The section in which Dr. Harris discusses the variety of the operation of the passions in animals and in man is rendered specially interesting by having been submitted in proof to Professor de Quatrefages, Mr. Wallace, and Professor C. J. Plumptre, and enriched with their observations. On two or three points Dr. Harris seems disposed to attack positions taken up by Mr. Darwin, and we agree with Mr. Wallace in wishing that the author had worked out his own views more fully, and had followed Mr. Darwin's example by giving copious facts and observations in support of them. The last of the feelings, excitements, or endowments appertaining to the medial constitution of man—affection—"consists in, or is constituted by, the settled and energetic attraction of the inclinations or emotions of the being moved by it towards some particular intelligent object with which he is in some way connected, so as to desire the constant presence, as also the welfare of such object."

The moral nature and constitution of man, and the operation of conscience, form the subject of Book II., and are treated with originality and vigour of thought, and great thoroughness.

Book III. is devoted to the mental nature and constitution of man, including the intellectual faculties, the faculties of understanding, reason, and genius, and the memory. The work concludes with a chapter on the concurrent operation and reciprocal influence of the various medial, moral, and mental endowments and powers of the soul, and some weighty considerations on mental discipline and cultivation. Dr. Harris quotes from Professor Huxley an anecdote that Des Cartes, when some one asked to see his library, took him into the dissecting room and showed him various anatomical preparations. He adds, "during the progress of the present work many hundreds of minds have been dissected by the author, and their various functions attentively examined while in full operation;" and remarks, with humour, "this is a species of vivisection which may be performed without cruelty or even pain, and of which the patient, however sensitive, is wholly unconscious."

We have probably quoted enough from this very thoughtful and

suggestive work to induce the many members of the Institute who are interested in the psychological treatment of the question to seek pleasure and instruction in its pages.

Abstract by Professor W. Boyd Dawkins, F.R.S., of a paper entitled THE BONE CAVES of CRESWELL CRAGS. By the Rev. J. M. MOLE, F.G.S.—On the MAMMALIA and TRACES of MAN found in the ROBIN HOOD CAVE. By Professor W. BOYD DAWKINS, F.R.S. Read at the Geological Society, April 5, 1876.

ON the north-eastern border of Derbyshire, a picturesque, well-wooded ravine, known as Creswell Crags, penetrates a low range of hills composed of magnesian limestone, with a stream of water flowing through it, and with caves and rock fissures opening into it on either side. In one of these, some forty or fifty yards long, known as "the Pin Hole," was an accumulation of sand, with big blocks of stone, pebbles, and large quantities of bones and teeth. The sand and pebbles had obviously been introduced by the stream flowing past the entrance, the big blocks of stone had fallen from the roof in the long course of ages, while the remains of the animals were scored and marked with teeth in such a manner as to leave no doubt as to the possessors having fallen a prey to some carnivore, which had eaten not merely their flesh but all their more slender and marrow-containing bones; and this creature was proved to be the spotted hyæna, now found only in Central and Southern Africa, by the associated jaws and teeth worn down to stumps from its bone-eating habits. The victims identified by Professor Busk belong to the grisly bear, wolf, common fox, Arctic fox, glutton, bison, reindeer, Irish elk, horse, woolly rhinoceros, and mammoth. Of these the Arctic fox, so abundant in the northern regions of Asia and America, is new to Britain, although it has been met with in similar accumulations in France, Germany, and Switzerland. The cave had evidently been a lair of hyænas, into which they had dragged the fragments of their food. And the victims which came within reach of their jaws are, of course, to be looked upon as samples of the animals then living in that region. We picture to ourselves the majestic Irish elk, the unwieldy mammoth and rhinoceros, the small horses, and the bisons and reindeer inhabiting the woodlands of the Upper Trent and coming down to the stream at Creswell to drink, to be scared by the echoing laugh of the hyænas, and to become their prey. A grisly bear would, of course, beat a hyæna in fair fight; and we can only account for its presence in the hyæna den by the supposition that it met with an accident or was overwhelmed by the number of its foes, which frequently hunt in packs. We may infer from the presence of the Arctic fox and the reindeer that the climate was more severe in Derbyshire during the time the cave was inhabited than it is now. It was probably analogous to that of America, north of a line drawn from Omaha to San Francisco, where the summer heat and the winter cold are excessive.

These discoveries were promptly followed up last autumn by the exploration of another cave close by, known as "the Robin Hood" —a familiar name in Derbyshire for caves—which revealed the presence of man in the neighbourhood while the animals mentioned above were roaming over the district. On the floor was a layer of light sand, without animal remains, on which rested a deposit of red sand of the same kind as that in the Pin Hole, and containing the bones of the same animals, with the exception of the glutton and the Arctic fox, and with the addition of the lion, the wild boar, and the brown bear. These had evidently been introduced by the hyænas. Above this was a stratum of red earth also containing the same species, but in addition a large number of rude implements of flint and of quartzite, triangular flakes which had been used for cutting, oval implements, with a cutting surface all round, and scrapers, which from their likeness to those in use among the Eskimos and North American Indians, were intended for the preparation of hides. These last are of the same sort as those which have been described as being in use in 1873 among the Shoshone Indians of North-Western Wyoming. "The Shoshones," an observer writes, "though mostly provided with tools of iron and steel of approved patterns, are still to be seen employing, as a scraper in the dressing of skins, a mere teshoa, consisting of a small horn boulder, thinner at one end, split through the middle in such a manner as to furnish a rough cutting edge at one side." And he adds, "there seems to be a considerable advantage in this over any form of knife or other tool which has yet reached them from without, and it is probable that it will be retained so long as their present method of preparing hides is in vogue." It is not a little strange to meet with this very tool in a cave in Derbyshire. The whole group of implements from this strata is of the same type as those found in the caves of Moustier, in Auvergne, and the lowest strata in Kent's Hole, as well as those which are scattered through the deposits of ancient rivers, in association with the extinct animals from the Alps and Pyrenees, as far to the north as Lincoln and Cambridge, and which have been met with in Palestine as well as in India. They all belong to man in the hunter stage of existence, and their presence here in association with the remains of animals brought in by the hyænas proves that the cave was occupied sometimes by the hyæna and sometimes by the hunters during the time that the red earth was being slowly deposited by the action of the rain.

The third stage in the history of the cave is represented by the breccia, a layer of earth, stones, bones of rhinoceros, hyæna, and reindeer; charcoal and implements cemented together into a solid mass by a calcareous infiltration, and covering up the red earth. Here the rude tools, manufactured for the most part out of stones found in the district, are replaced by a more highly finished series, made of flint brought from a distance, and altogether superior to them in style and workmanship. Among the more noteworthy are well-chipped spear-heads of the same pattern as those found in

several of the caves and stations of the reindeer folk in France, as, for example, at Solilié, and which are held by M. Gabriel de Mortillet to be of later date than the ruder forms which have been described from the cave earth. In this case, then, we have proof of the truth of his classification, which was intended merely to apply to the palæolithic implements of France. Similar finely-chipped spear-heads have been discovered in Kent's Hole and Wookey Hole, and form part of a series which is associated with the incised carvings of animals, such as the reindeer, mammoth, and horse, which are so striking in the accumulations of refuse left behind by the Eskimos dwellers in caves in Central Europe. Belgium is the nearest point to Creswell Crags, in an easterly direction, in which they have been discovered up to this time. We must therefore take these more highly-finished articles to imply the presence of hunters in Derbyshire following the same kind of life as the Eskimos of the continental caves, armed with the bow and the spear, unacquainted with metal and the use of pottery, and unaided in the chase by the dog. Among the animals which they hunted in Derbyshire was the reindeer, and the hyæna was not extinct in their time. To the presence, indeed, of this bone-eating animal we should be inclined to attribute the extraordinary rarity of human bones of this period as compared with their great abundance in the succeeding neolithic age. There is no reason why a human bone should not last as long as that of a fox or a lion. Probably the palæolithic, like the modern Eskimos, were careless of the dead, in which case the hyænas would quickly make an end of them. On the breccia was a modern accumulation of surface soil, containing fragments of Roman and mediæval pottery.

Thus we have a regular sequence of events recorded in Robin Hood's cave. First, there was a time when it was a den of hyænas, and man was not. Secondly, it was occupied by a rude tribe of hunters, from time to time, and when they left it the hyænas returned to their old haunts. Thirdly, another set of hunters, allied to the Eskimos, then living on the continent, followed the hunt, until they, too, found a shelter here. And, lastly, after an interval, in which most of the animals mentioned above became either extinct or retreated to hotter or to colder climates, it was visited during the Roman occupation of Britain. We take this discovery to be the most important, in its general bearings, which has been made in this country since the exploration of the Brixham cave in 1858.

THE MECHANISM OF MAN: *in answer to the question, What am I?* By E. W. COX, Serjeant-at-Law, President of the Psychological Society of Great Britain. Vol. I., The Mechanism. London: Longmans & Co. 1876.

THE present book is to a certain extent a new and enlarged edition of the work, "What am I?" which we noticed in this Journal at the time of its appearance. The author tells us in his preface that "a new edition being called for, I resolved, after some consideration, to extend and re-cast the entire work. The subject

had grown upon me as the task proceeded. One thought had suggested other new thoughts. A more systematic scheme of treatment had occurred to me. Some themes fitly belonging to the subject had been overlooked. Criticism had discovered defects to be removed, and omissions to be supplied. Further reflection had changed some of the suggestions offered, and modified others. Instead of a new edition, I resolved to re-cast and re-write almost the entire of the work, to extend the scheme of it, and to give to it a more appropriate name. It is now in fact, as in title, a new book, increased in bulk by one-fourth, and having three-fourths of it entirely new." (Preface, ix.)

This statement of the author will serve to show the precise nature of the present work, and wherein it differs from that which preceded it. The various sections have been entirely re-arranged as regards the order in which they are placed. Many of them have been re-written, and a considerable amount of new matter has been added, so as to increase the bulk of the present volume from 367 to 495 pages. In addition to this, what we cannot but consider a great desideratum in a book of this kind, in order to facilitate reference to the vast number of subjects which it embraces, a copious index has been supplied. The work, thus rendered complete, will form a valuable addition to the library of every student of the science of man, embracing as it does all the leading questions connected with that department, while its matter will be found to be full of deep interest to all inquirers into this most important topic.

THE OTHER WORLD; *or Glimpses of the Supernatural, &c.* Edited by the Rev. F. G. LEE, D.C.L. In two vols. London: Henry S. King & Co. 1875.

THE work before us ranges over a vast variety of subjects, a limited portion only of which come within the province of the anthropologist, as regards the psychological department of the science. We shall scrutinise, as we proceed, the facts adduced bearing on this topic, and its mode of treatment adopted by our author. The first volume enters largely upon matters which are considerably more theological than philosophical in their nature, such as "the miraculous in Church history," and "the spiritual powers and properties of the Church—sacraments, sacramentals." Upon subjects such as these we must of course decline to enter; while at the same time we may, passingly, express our satisfaction that our omission to do so will be abundantly atoned for by those of our numerous contemporaries which are especially devoted to topics of this class. Even Materialism our author deals with rather in its polemical than its philosophical aspect; and Necromancy is treated more as a religious than a scientific question.

The subject of "Dreams," which is closely connected with that of psychology, though here considered in conjunction with "omens, warnings, presentiments, and second sight" (hardly within the province of anthropology, extensive as that province is), has lately attracted a good deal of notice, and excited much discussion,

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especially in the scientific treatises of Dr. Carpenter and Mr. Serjeant Cox. Passing by the theological consideration of the subject to which our author devotes several pages exclusively, we are led to the examination of the facts adduced by him, and to his conclusions drawn from those facts. In dealing with phenomena of this description, it is especially important that two leading circumstances should be inquired into and determined. 1. Are the facts as stated clearly ascertained, and are they correctly set forth? 2. Did the predictions asserted to have been made on the occurrence of these phenomena really come to pass as foretold? Inquiries of this kind are well worthy the consideration of philosophical societies devoted to investigations of this class—the Psychological Society, for instance. And it would be desirable to select one prominent case of this description for searching investigation before a sound judging, impartial, scientific tribunal. For instance, the remarkable presentiment respecting Mr. Perceval's assassination, which is recorded by Dr. Lee, and which has been several times mentioned by different writers, appears a very suitable case for an inquiry of this sort. Probably the most perplexing cases of avowed apparitions are those relating to the appearance of persons at the moment of death, who have died in a far distant land, especially where, as in the case related in Lord Brougham's memoirs,* this was in pursuance of a mutual promise between the parties. Of appearances of this class, our author adduces some instances which he considers to be well authenticated. Several of these anecdotes have already appeared in other works of this description; but to have omitted them on that account would have necessarily rendered the present collection imperfect, and which does not pretend to consist entirely of original narratives. To all lovers of the romantic, and more especially to those who are curious in speculations and inquiries of the nature here alluded to, the book before us must be full of deep and exciting interest, and will be read by them with avidity. To reject all such cases with stern incredulity, and without examination, is surely as unscientific as the unwarrantable credulity exhibited with regard to them by those who accept whatever of this kind is presented to their notice, without inquiry and without scrutiny.

PREHISTORIC ANTIQUITIES IN FLORIDA, U.S.

THE *Cincinnati Commercial* of the 16th March, 1876, gives an account of the opening of a mound on Colonel Hart's plantation on Murphy's Island, near Pilatka, on the St. John's River, Florida.

At the southern end of Lake George an artificial reservoir is

* Vol. i. pp. 201—204. Dr. Lee, however, omits to state that Lord Brougham concludes the paragraph here quoted from by recording his deliberate conviction that the appearance in question might be accounted for by natural causes. But then this opinion was formed sixty years after the occurrence of the event, and we have been assured, on reliable authority, that in the interim Lord Brougham expressed his belief that the apparition in question was really genuine, which would seem to have been his feeling at the time he described it in his journal.

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described 100 yards broad by 150 wide, and a tumulus, also artificial and probably built of earth removed from the former; there were found on it live oaks of 3 feet in diameter. Silver Spring, to which point the navigation of the Ocklawana is limited by low water, has many relics of ancient civilisation upon it—pottery, axes, arrow-heads, and all the marks of a dense population. Every river shows such marks. They are abundant on the rich lands of Marion and Alachua counties, in the hummocks of the Suwanee, on the Miami, St. John's, Indian River, and the Kissinee.

The characteristic of the artificial topography of the Florida tribes was a high pyramidal mound of earth resembling the Mexican *Teocallis* and the Egyptian *pyramid*, near a lake or river, and having stately avenues leading up to it or to an artificial reservoir, suggesting artificial irrigation upon a plan resembling the new Mexican acequias. The mounds here described appear to be something different from the large shell mounds explored by Prof. Wyman, which were formed solely by the accumulations of refuse food.

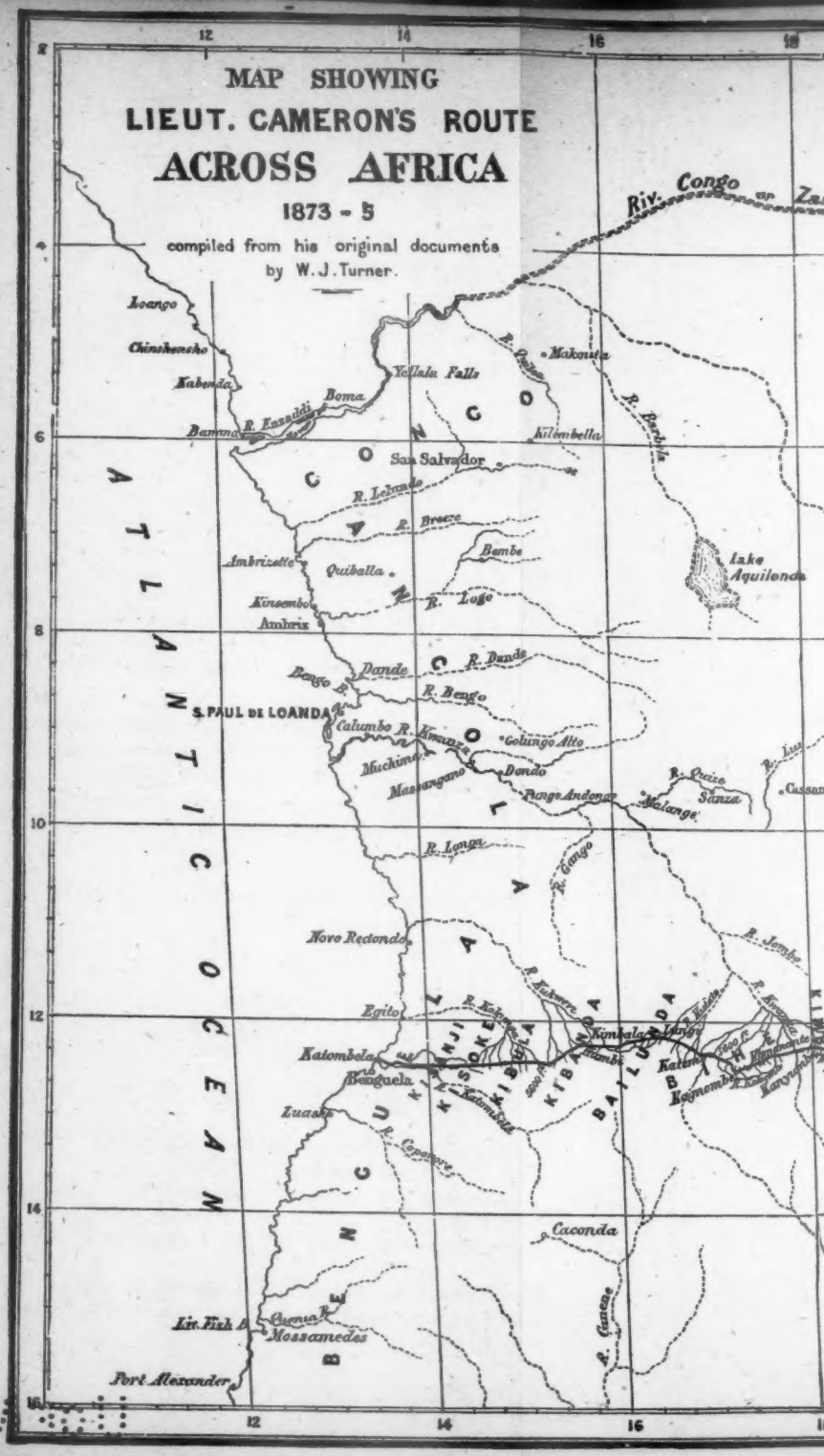
As remarkable as the pyramidal mounds and artificial lakes are the highways, about 50 yards wide, sunk a little below the common level, and the earth thrown up on each side, making a bank about two feet high. From the St. John's to the Keys, these mounds, reservoirs, and highways were visible a few years ago.

There are such mound cities near Lake Monroe and Lake Harney, besides those on Lake George. Blue or white glass beads are found, and small earthenware pyramids, with triangular bases, suggesting some symbol allied to the pyramidal *Teocallis*. Some human bones found in the mounds are those of men of large stature.

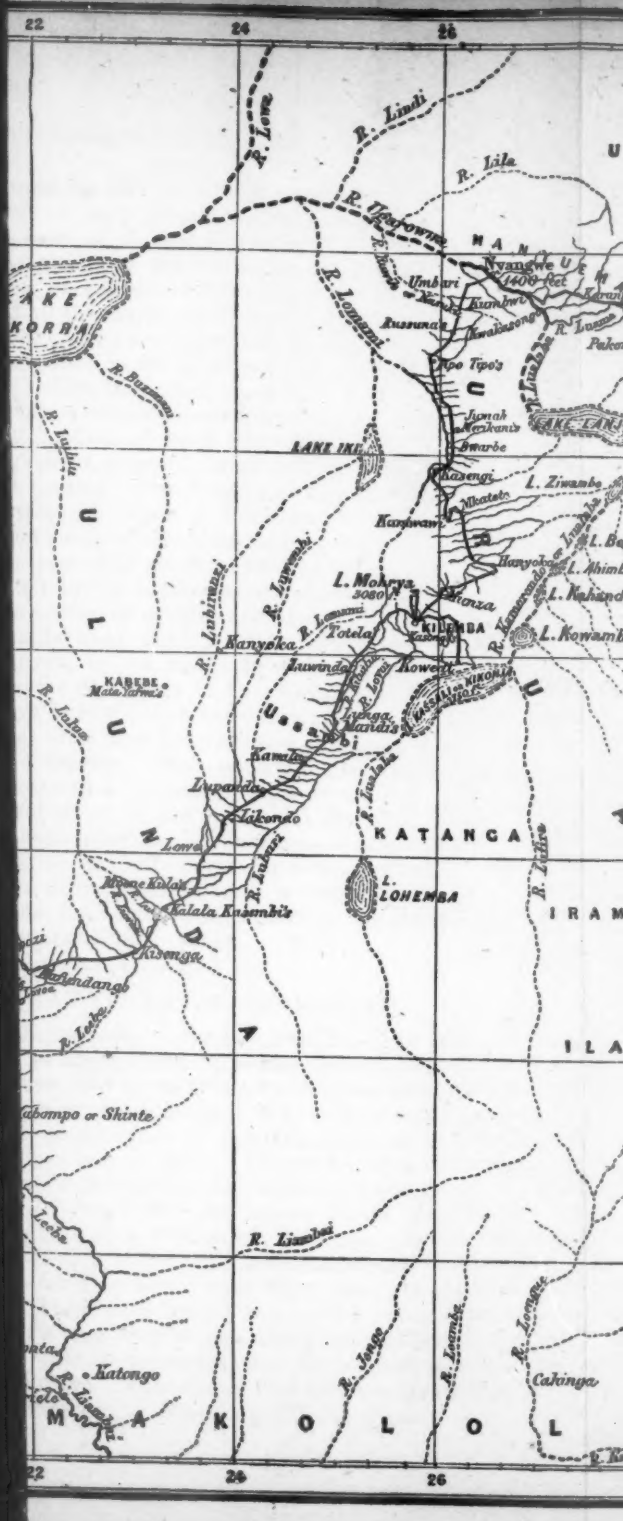
The northern tourist, as he drifts down the rivers, sees nothing of their antiquities. In order to find them it is necessary to penetrate the hummocks, and have an eye for detecting the difference between a natural and an artificial elevation.

A PIGMY GRAVEYARD IN TENNESSEE.

An ancient graveyard of vast proportions has been found in Coffee county. It is similar to those found in White county and other places in Middle Tennessee, but is vastly more extensive, and shows that the race of pigmies who once inhabited this country were very numerous. The same peculiarities of position observed in the White county graves are found in these. The writer of the letter says:—"Some considerable excitement and curiosity took place a few days since, near Hillsboro, Coffee county, on James Brown's farm. A man was ploughing in a field which had been cultivated many years, and ploughed up a man's skull and other bones. After making further examination they found that there were about six acres in the graveyard. They were buried in a sitting or standing position. The bones show that they were a dwarf tribe of people, about three feet high. It is estimated that there were about 75,000 to 100,000 buried there. This shows that this country was inhabited hundreds of years ago."—*Woodbury (Tenn.) Press.*


MAP SHOWING
LIEUT. CAMERON'S ROUTE
ACROSS AFRICA
1873 - 5
compiled from his original documents
by W. J. Turner.
Riv. Congo
Loango
Chinchenscho
Kabenda
Boma
Yellala Falls
Makuta
Bamma
R. Enzadi
Kilimbella
San Salvador
R. Lelondo
R. Bruco
Ambrizette
Quiballa
Bembe
Lake Aquilonda
Kinsembo
Ambriz
R. Loge
Dande
R. Dande
Bengo
R. Bengo
S. PAUL DE LOANDA
Columbo
R. Kwanza
Golungo Alto
Muchima
Massangano
Dondo
Pungo Andonga
Malange
Cassan
R. Longa
R. Congo
Novo Redondo
Egito
R. Kubango
Katombela
Benguela
Kimbala
Longa
Kasembe
Luasko
R. Copororo
Caconda
Lin. Fish B.
Cunene R.
Mossamedes
Port Alexander
ATLANTIC OCEAN
ANGOLA
BENGUELA
BAILUNDA
KIBOKO
KIBALA
KAKONDA
KAKANJI

18
20
22
24
26
SCALE OF ENGLISH MILES
0
50
100
150
200
Zaire
R. Lowa
R. Lindi
R. Lila
R. Lomami
LAKE SANKORRA
Nyangwe
1400 feet
Umburi
Russuna
Tipo Tipo's
R. Lulua
R. Kasabi
R. Kwango
R. Lubiranzi
R. Luwembi
LAKE IKI
Kasongo
Kamwani
Kanyoka
L. Mohrya
3080 ft
KILEMBA
Totela
Luwinda
Kowedi
Ussambi
Kamba
Lupanda
Likendo
KATANGA
L. LOHEMBA
KABEBE
Matia Yafwa's
R. Lulua
R. Luiza
R. Lui
Cassange
Cabango
R. Chihombo
R. Lovua
R. Loembwe
R. Kwengo
R. Jembo
Katende
R. Kasabi
Kisenga
Kalala Kasembi's
L. Dilolo
Katema
Peho
R. Loina
Kabompo or Shinte
Kakenge
Kissembe
KIBUNDA
R. Leeba
R. Lisambai
R. Coguema
R. Kwilo
Libonta
Katongo
Naricole
R. Jengo
R. Loambe
R. Lungua
KIBOKWE
LOVALE
LUNDA
MAKOLOLO
URUA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R. Lovu
R. Lindi
R. Lila
R. Lomami
Nyangwe
1400 feet
Umbari
Kumbwe
Russunga
Kwakasong
R. Luvua
Pakwa
Tipo Tipo's
Lusah
Kwakwa's
Swarbe
LAKE IKE
Kasengi
L. Ziwambo
Mkatete
Kanjwan
Kanyoka
L. Mohrya
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KULEMBA
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KABEBE
Mata Yafwa
Kamla
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Katongo
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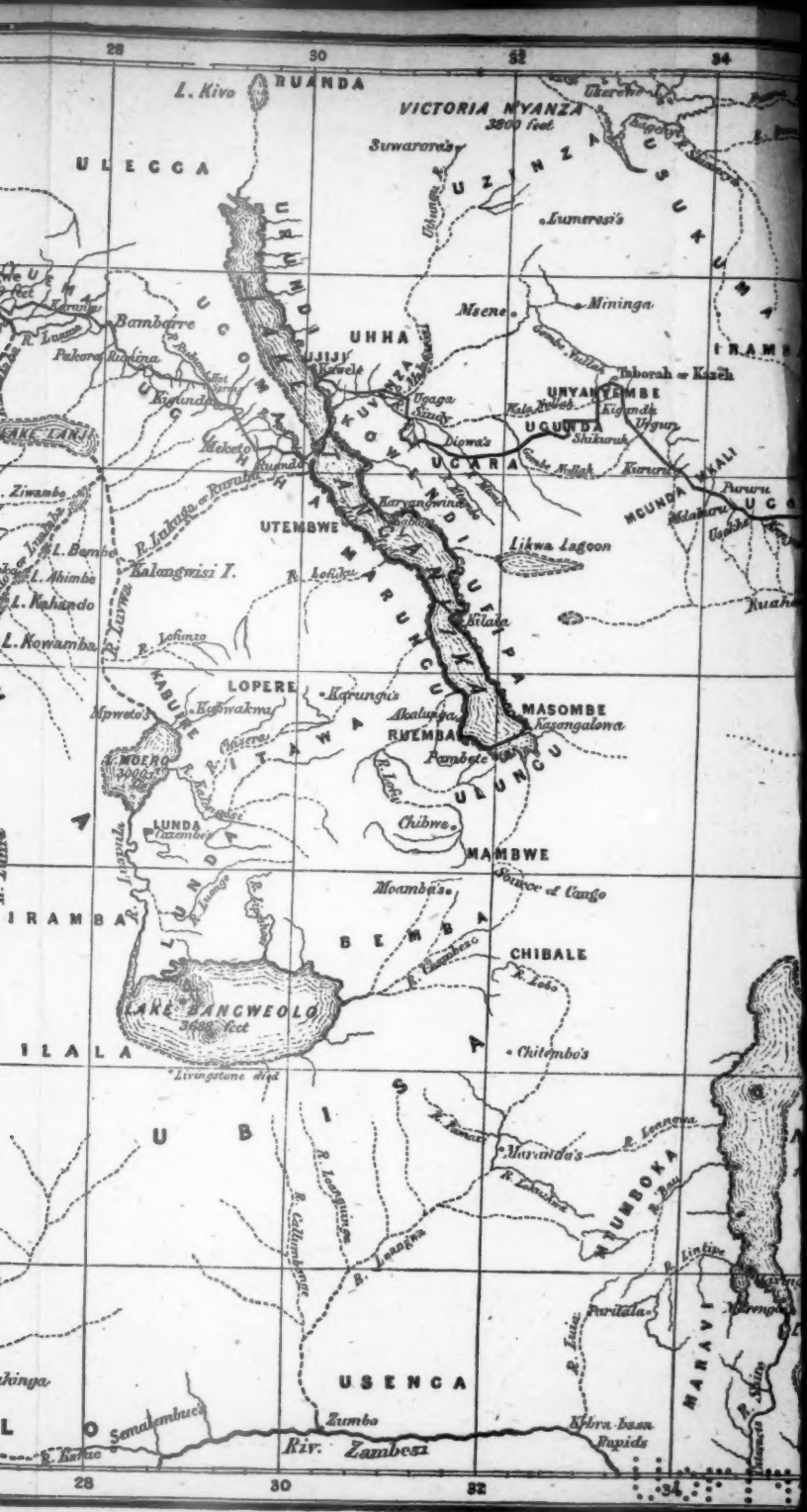
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L. Kivo
RUANDA
VICTORIA NYANZA
3800 feet
Suwarora's
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Pakera
Kigunda
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Miminga
IRAMBA
Iborah or Kaeh
UNYANYEMBE
Kigandi
UGUNDA
Shikarah
Ugogo
Diewa's
UCARA
Meketo
Rundi
Karyangwinsi
UTEMBWE
Lihwa Lagoon
L. Bambo
L. Ahimbe
L. Kahando
L. Kowamba
Lofinzo
Kalangwisi I.
Kilala
LOPERE
Karungu's
MASOMBE
Kasangaloma
Mpweto's
Kabwakma
Akalunga
RUEMBA
Pambete
MOERO
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LUNDA
Chibwe
MAMBWE
Source of Congo
Moamba's
BEMBA
CHIBALE
LAKE BANGWEOLO
3488 feet
Chitembo's
ILALA
Livingstone died
Mwanda's
Lunboka
Purilala
USENCA
Zumbo
Kebra-basa Rapids
Riv. Zambesi
MARAVI
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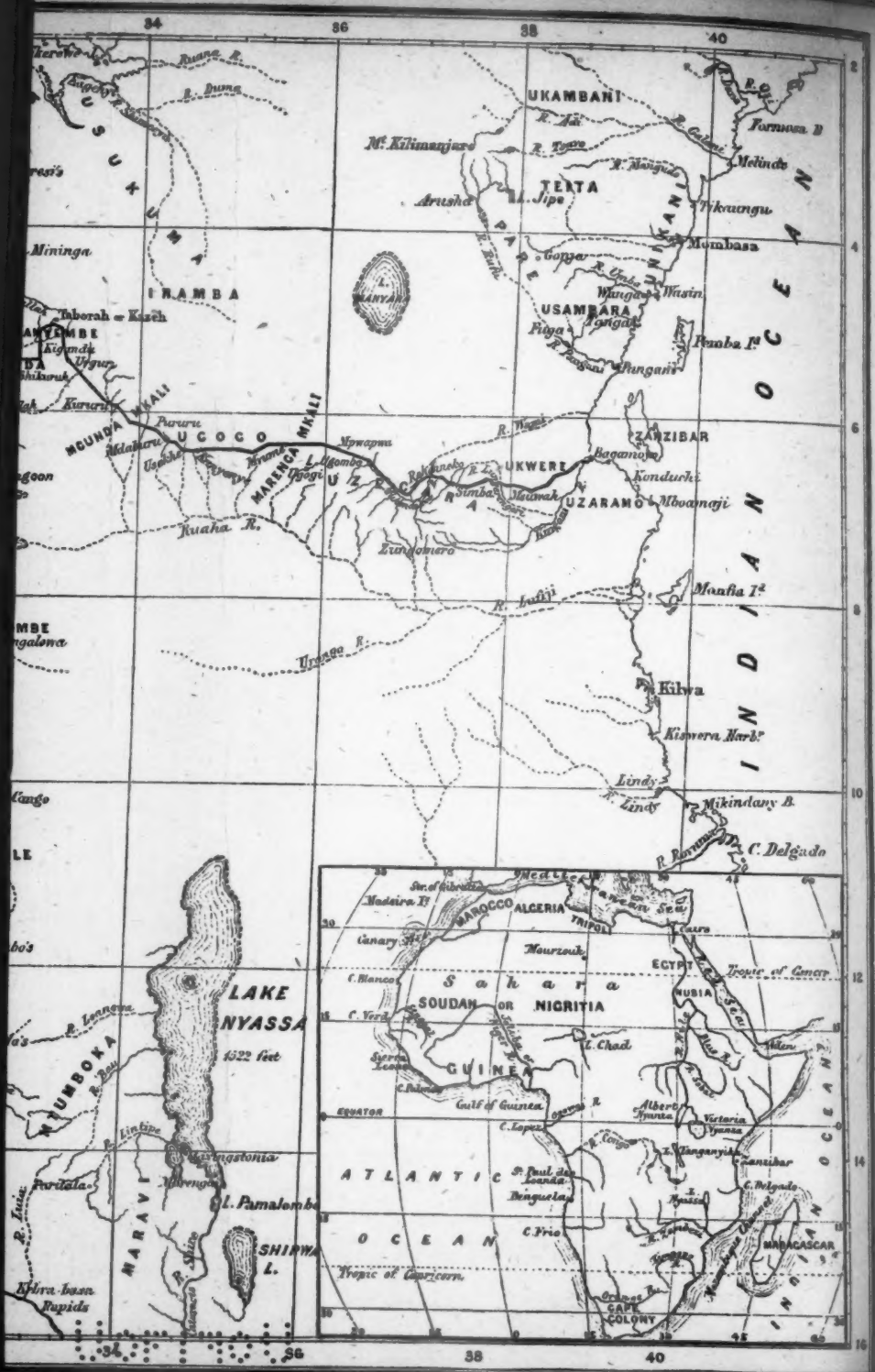
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UKAMBANI
TEITA
USAMBARA
IRAMBA
UCOCO
UKWERE
UZARAMO
ZANZIBAR
Mombasa
Melinde
Pemba I.
Mafia I.
Kilwa
Lindy
Mikindany B.
C. Delgado
Mt. Kilimanjaro
Arusha
Jipe
Taveta
Gonja
Wanga
Wasin
Fuga
Pangani
Mungani
Mbuamaji
Konduchi
Baganoyo
Simba
Maimak
Zirudomero
Kuaha R.
Mpwapwa
Mdaburu
Kurura
Pururu
Uyui
Uyanzi
Ugogi
Ugombo
Rehenneko
Mgunda Mkali
Marenga Mkali
Kisigdi
Uyui
Taborah or Kaseh
Miningo
Kiwa R.
Ruaha R.
Rufiji R.
Uzungwe R.
Luangwa R.
Lintipe
Livingstonia
Mpovingo
L. Pamalombe
Shirwa L.
Ekhra-bassa Rapids
Maravi
Shire R.
Zambesi R.
Tumboka
Lake Nyassa
4322 feet
Sahara
Soudan or Nigritia
Guinea
Atlantic Ocean
Indian Ocean
Madeira Is.
Canary Is.
Morocco
Algeria
Tripoli
Egypt
Nubia
Mourzouk
L. Chad
Niger R.
Benue R.
Abbeokuta
Gulf of Guinea
Equator
Tropic of Cancer
Tropic of Capricorn
Cape Colony
Madagascar
St. Paul de Loanda
Benguela
C. Frio
C. Lopez
C. Palmas
C. Verd
Sierra Leone
Albert Nyanza
Victoria Nyanza
L. Tanganyika
L. Nyassa
Zambesi R.
Limpopo R.
Orange R.
Congo R.
Gaboon R.
Rovuma R.
Juba R.
Tana R.
Sabaki R.
Athi R.
Tsavo R.
Kilimanjaro
Mangasi R.
Pangani R.
Wami R.
Kingani R.
Rufiji R.
Lukuledi R.
Lindy R.
Mikindany R.
Rovuma R.
Kilwa
Kisiwara Harb.
Mbuamaji
Konduchi
Baganoyo
Zanzibar
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Formosa B.
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Mombasa
Vikuungu
Jipe
Taveta
Arusha
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Uzungwe R.
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